



COMSTECH YEARBOOK 2020



COMSTECH Yearbook 2020

Compiled by
Ikram Abbasi
Programme Manager, COMSTECH



COMSTECH

COMSTECH Yearbook 2020

Table of Contents

Preface.....	5
1. Prof. Dr. M. Iqbal Choudhary Assumes Charge as Coordinator General, COMSTECH	7
COMSTECH Programmes	8
2. COMSTECH Food Security Project Attracts Funding from COMCEC	8
3. COMSTECH Intra-OIC Cooperation for Conservation of Plant Genetic Resources and its Use in the Varietal Development	9
4. Development of National Gene Banks in the OIC Member States	10
5. COMSTECH Capacity Building Initiative for 2020-21.....	11
6. COMSTECH and TUBITAK Join Hands for Capacity Building of OIC Member States	12
7. COMSTECH Fellowships for Research and Advanced Training in Virology and Vaccine Technologies	12
8. COMSTECH Program for Technical Training	13
9. COMSTECH in Collaboration with UoL Offers Research Fellowships	13
10. COMSTECH Announces Award Winners	14
11. COMSTECH Annual Scholarships for Turkish Scholars	16
12. COMSTECH-IFS Fund Over US\$ 0.21 Million Science Projects in OIC States	17
13. COMSTECH Confers Awards on OIC Scientists.....	37
14. COMSTECH and MoFA launched COMSTECH Consortium of Excellence (CCoE)	40
15. COMSTECH Posters – insights into development of OIC states	42
COMSTECH MoUs signed with different organizations	42
16. COMSTECH and Pink Pakistan Trust Signed MoU to Achieve SDGs and Promote Women Wellbeing in Muslim Countries	42
17. COMSTECH and International Turkic Academy enter into MoU.....	43
18. COMSTECH and Al-Shifa Eye Trust inked MoU to enhance research in ophthalmology and prevent blindness in OIC member states.....	45
Exhibitions, workshops and courses conducted	47
19. Prime Minister visits MoST exhibition on COVID-19 related products at COMSTECH.....	47
20. International Workshop on Sustainable Cities.....	48
21. 1st COMSTECH Showcasing of Artificial Intelligence and IoT Products and Services: AI and IoT for Pakistan.....	49
22. Certificate Course on Diagnosis of COVID-19	52
23. 4-Day Workshop on Environment Modeling Based Requirements Engineering	53
24. Online Certificate Course on Serological Testing of SARS-CoV-2: Sample Collection, Testing & Result Interpretation	54
25. Course on Symmetry Operations for Crystallographers	55



COMSTech

COMSTech Yearbook 2020

26. Online workshop on innovation in entrepreneurship education.....	56
27. Virtual seminar on grow, nourish and sustain together	57
28. COMSTech Int'l workshop and exhibition on AI in healthcare.....	59
29. COMSTech Al-Farabi Forum	60
COMSTech Webinars	73
30. Webinar on Status of STI in OIC Region	73
31. Webinar on Science Advice to the Governments	75
32. Webinar on Response to COVID-19	77
33. Webinar on COVID-19 Epidemiology Evidence Based Policy and Prospects for Vaccine	79
34. Webinar on Network Evolution	80
35. Webinar on Science Diplomacy during COVID19.....	82
36. Webinar on Science Communication.....	84
37. Webinar on Hepatitis B and C: “Discovery to Elimination 2030”	87
38. Webinar on Intellectual Property Rights for Scientists	87
39. Webinar on light and polymers	90
40. Webinar on Sustainable Water Management	90
41. Webinar on Plants and their Metabolites as Leading Molecules for Pharmaceutical Industry.....	91
42. Webinar on Opportunities for Production of Biosimilar Medicines in OIC.....	92
43. Webinar on Mega-stability: Definition, Multi-stability, and Hidden Attractors.....	94
44. Webinar on Pakistan Randomized and Observational Trial to Evaluate Corona Virus Treatment (PROTECT).....	95
45. COMSTech Webinar on Innovation Policy for OIC states.....	97
46. Webinar on Pandemic Lessons for Science Communication	98
47. Webinar on “One Health”	100
48. Virtual Seminar on Saline Agriculture – Global Food Security	102
49. A Virtual Seminar – World Food Day	104
50. Webinar on Nanomaterials for Sensors and Photochemical Applications	106
51. A Public Lecture on Engagement in Medical Research to Promote National Health and Wellbeing.....	107
Meetings with institutions and dignitaries.....	109
52. Coordinator General, COMSTech meets minister of science and technology	109
53. OIC General Secretariat Interacts with the New Coordinator General COMSTech to Discuss Various Activities.....	110
54. OIC, WHO and COMSTech Discusses Formation of Regional Working Group on Health	118
55. Coordinator General COMSTech Meets President of AJK.....	119



COMSTECH

COMSTECH Yearbook 2020

56. COMSTECH Networks OIC Labs to Develop Diagnostic Kits for COVID-19.....	119
57. H.E. Ambassador of Uzbekistan Visits COMSTECH	121
58. Steering committee meeting for Implementation of the OIC S&T Agenda	121
59. COMSTECH and IUCr's Meeting for Joint Projects.....	122
60. Coordinator General COMSTECH Participates in 47th Session of CFM.....	123
61. Ambassador of Yemen lauds COMSTECH services.....	124
62. COMSTECH Outreach Activities	125

COMSTECH Yearbook 2020

Preface

The ministerial standing committee on scientific and technological cooperation of the OIC, known globally as COMSTECH, represents collective will of 1.5 billion Muslims, and 57 member states for science and technology based socio-economic development through inter Islamic cooperation, and nourishing a scientific culture.

COMSTECH was established by the 3rd Islamic Summit of OIC held at Makkah, Saudi Arabia in January 1981. It is the only OIC organization chaired by Pakistan, with President of Pakistan as Chairman, and Prime Minister as the Co-chair. Being the most powerful inter-governmental organization hosted by Pakistan, COMSTECH play a key role in country's science diplomacy initiatives.

Since its inception, COMSTECH has worked from its beautiful headquarter building in Pakistan's capital Islamabad to achieve its core mission. This includes assessment of human and material resources of member states, identification of scientific and technological needs of Ummah, indigenous capacity building, enhancement of cooperation and coordination in S&T field, and creation of institutional mechanism for inter-Islamic cooperation.

Like previous years, in year 2020 COMSTECH continued its activities, and launch several new initiatives. However, 2020 was a remarkable year for all the human race and all international organizations have redirected their focus to handle this socio-economic and health crises of unprecedented magnitude, as well reinvented the way the work is done. COMSTECH too has initiated several pandemic related projects, focusing on S&T knowledge and tools, and continued its activities despite constraints of mobility and resources.



COMSTECH

COMSTECH Yearbook 2020

Yearbook 2020 provides only glimpses of what was achieved, and what is underway. It is also a document for readers to identify areas where they would like to interact and engage with COMSTECH. We sincerely hope 2021 will be better than 2020, and humanity will come out of this crises much stronger and wiser.

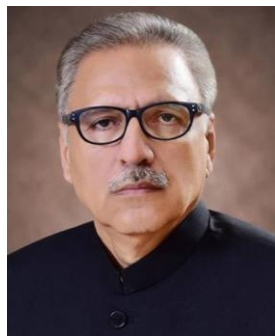
Prof. Dr. M. Iqbal Choudhary *H.I., S.I., T.I.*
Coordinator General
COMSTECH

COMSTECH Yearbook 2020

1. **Prof. Dr. M. Iqbal Choudhary Assumes Charge as Coordinator General, COMSTECH**

The President of Pakistan, Chairman COMSTECH has appointed Prof. Dr. M. Iqbal Choudhary (H.I., S.I., T. I.) the Coordinator General of COMSTECH. COMSTECH is the only OIC institution chaired by Pakistan.

Prof. Dr. M. Iqbal Choudhary is a Distinguished National Meritorious Professor and Director at International Center for Chemical and Biological Sciences (H. E. J. Research Institute of Chemistry and Dr. Panjwani Center for Molecular Medicine and Drug Research). He is among the most prominent scientists of Pakistan, recognized for his original contributions in the fields of natural products and bioorganic chemistry. He has written and edited 76 books, most of which have been published in USA and Europe. He is also the author of over 1,175 research papers and chapters in top international science journals of the West, as well as 40 US patents. This is by far the largest number of quality publications from any scientist in Pakistan. He has been among the most cited scientists of Pakistan in last five years with citations exceeding 27,407 (h-Index: 68). He has served as a visiting faculty in many prestigious universities of the world, including Cornell University (New York), Purdue University (Indiana), Pennsylvania State University (Pennsylvania), Scripps Institution of Oceanography (San Diego, California), The University Rhode Island (Rhode





COMSTECH

COMSTECH Yearbook 2020

Island) and various top Universities of UK, China, Saudi Arabia, Malaysia, Kazakhstan, and Iran.

Prof. Choudhary has won several national and international awards, such as Hilal-e-Imtiaz, Sitara-e-Imtiaz and Tamgha-e-Imtiaz by the President of Pakistan, Pakistan. Academy of Sciences Gold Medal, National Book Foundation Prize on best book and the Third World Academy of Sciences Young Scientist Prize. He received the prestigious title of “Distinguished National Professor” from the Higher Education Commission in 2004 and Meritorious Professor by the University of Karachi 2013. He is a member and fellow of many prestigious societies including Fellow of The Academy of Sciences for the Developing World, Islamic Academy of Sciences, Chemical Society of Pakistan, Royal Society of Chemistry (London) and LEAD-International. He is also the recipient of the 1st Khawarizmi International Award and Prize from the President of Islamic Republic of Iran, Economic Cooperation Organization (ECO) Award in Education by the President of Azerbaijan, COMSTECH Award in Chemistry by the Prime Minister of Pakistan and more recently Chinese Academy of Sciences Distinguished Foreign Scientist Award.

COMSTECH Programmes

2. COMSTECH Food Security Project Attracts Funding from COMCEC

COMSTECH capacity building project on the use of New Breeding Technologies for Food and Nutritional Security has been selected for this year's project funding under COMCEC project funding scheme. The Economic and Commercial Cooperation Standing Committee of the Islamic Cooperation Organization (COMCEC) is one of the four Standing



COMSTech Yearbook 2020

Committees of the OIC, which was established in 1981 and based in Ankara, Turkey.

The project envisages institutional and human resource capacity building of Pakistan, Turkey, Malaysia, Iraq, Jordan, Saudi Arabia and Egypt, 7 OIC member states, by conducting training courses on the introduction of New Breeding Technologies in Agriculture to achieve nutritional food security. Scientists from National Institute of Biotechnology and Genetic Engineering (NIBGE), Pakistan are among leading trainers in this project. The project was conceived and designed in close collaboration with NIBGE, Pakistan, and Niğde Ömer Halisdemir University (NOHU), Turkey. It directly helps to ensure food security and nutrition in the 7 OIC member countries while indirectly works to increase resilience of the food system in the member countries. Prof. Dr. M. Iqbal Choudhary, Coordinator General COMSTech congratulated Ms. Khazima, Programme Manager for leading the efforts in this inter-OIC capacity building project in this critically important field.

3. COMSTech Intra-OIC Cooperation for Conservation of Plant Genetic Resources and its Use in the Varietal Development

COMSTech has doubled its efforts recently in order to increase the resilience of food systems in the OIC



states. It was initiated in May 2018 when COMSTech in collaboration with Pakistan Agricultural Research Council (PARC) and ECO Science Foundation conducted a workshop of the stakeholders from the OIC member states to comprehend the



status of Genebank operations management systems. Experts from 15 OIC states participated in the workshop and recommended on various aspects related to strengthening of plant genetic resources. These included germplasm collection, promoting evaluation and utilization of plant genetic resources for varietal development and the integration of their seed system, as well as promoting technical cooperation between member states for Genebank establishment/management. To carry the effort forward, a Working Group of experts from 15 participating countries was formed.

Based on the recommendations of the Working Group, COMSTech in collaboration with Food and Agriculture Organization of the United Nations (FAO), and the Pakistan Agriculture Research Council (PARC) has developed a multinational project on “Promotion of Plant Genetic Resources Use in the Varietal Development and its Integration in the Seed System”. The project is aimed to benefit five OIC countries, viz. Azerbaijan, Jordan, Kazakhstan, Oman and Pakistan, through mutual collaboration and strengthening of the institutional capacities of these countries. Two consultative meetings, the first one in Pakistan and the second one in Azerbaijan, have been held in 2019 for inputs from the participating countries and expert opinion for development of the proposal. After thorough deliberations and inputs from the representatives (nominated by their governments) of participating countries, the project is being finalized for eventual presentation to potential donors later this year.

4. Development of National Gene Banks in the OIC Member States

COMSTech has joined hands with the Islamic Organization for Food Security (IOFS), Kazakhstan on its initiative for “Developing

COMSTECH Yearbook 2020

National Gene Banks in the OIC Member States". A teleconference meeting of the stakeholders from the IOFS, Dubai Food Security Organization, COMSTECH, and FAO headquarters, Italy was held in February 2020 for brainstorming a plan of action towards the said agenda. As the first step towards this initiative, it has been decided to hold a consultative workshop of the potential stakeholders in 2020. Participation is expected from the representatives of Gene Banks in OIC member states, experts from the relevant OIC institutions and some reputed international organizations working in the area of food security. The workshop will deliberate on the role of Gene Banks, country experiences, and issues and challenges on establishment of Gene Banks. The workshop would be expected to produce a status report on the development of Plant Genetic Resources in OIC Member States and also an elaborate plan of action for intra-OIC cooperation in the area of Plant Genetic Resources for Food and Agriculture.

5. COMSTECH Capacity Building Initiative for 2020-21

To build the capacity of OIC states in the cutting-edge emerging areas of S&T, COMSTECH has planned fifteen thematic workshops, training courses and conferences for 2020-2021 which will be organized at different venues in OIC states with the cooperation of relevant research institutions on the topics of Artificial Intelligence in Health Care, Fundamental Techniques in Viral Diseases Diagnostics, Nanomedicines - Designing, Development, and Characterization Techniques, Training Course for Drug Regulators, Crystallography Workshop with the Support of IUCr, Plant Genetic Resources/ Genebanks, Building Capacity for Maternal, Newborn and Child Health Care, Nanotechnology, Biotechnology, Biodiversity as Source of Novel Drugs against Neglected Tropical Diseases, Application of Genomics in Health



COMSTECH

COMSTECH Yearbook 2020

and Agriculture, Renewable Energy, Climate Change and Technician Training for Science Labs. Event coordinators at COMSTECH are engaged in communication with different institutions and experts for collaboration and organization of these events.

6. COMSTECH and TUBITAK Join Hands for Capacity Building of OIC Member States

Coordinator General COMSTECH, Prof. Dr. M. Iqbal Choudhary had a virtual meeting with the Executive Vice President of Scientific and Technological Research Council of Turkey (TUBITAK), Prof. Dr. Orkun HASEKİOĞLU, on 16th June 2020 at 1500 hrs. Ms. Khazima Muazim, Programme Manager, COMSTECH also attended the meeting.



Both dignitaries decided to extend support and partnership in holding capacity building initiatives in areas of science, technology and engineering. These will include joint holding of thematic workshops, and providing research scholarships for OIC countries. TUBITAK offered support to COMSTECH in technicians training in Pakistan and least developed OIC member states. It was decided to invite SESRIC to join technicians training initiative. COMSTECH and TUBITAK agreed to work together to ensure availability of sustainable support for STI projects in future. It was mutually decided to conduct strategic review of various STI initiatives in OIC countries.

7. COMSTECH Fellowships for Research and Advanced Training in Virology and Vaccine Technologies

COMSTECH offers fellowships to young scientists in OIC countries to enable them to spend 3 months at a relevant centre of

COMSTech Yearbook 2020

excellence in an OIC member state, other than their own. The purpose of these fellowships is to enhance the research and development capacity of promising scientists, especially those at the beginning of their research career, helping them to foster linkages for further collaboration in the field of virology and vaccine technology. For further details and application submission please browse <http://www.comstech.org/comstech-fellowships.aspx>

8. COMSTech Program for Technical Training

COMSTech offers internship to technical personnel in developing OIC countries to enable them to spend 4-6 weeks at a centre of excellence/ university in OIC member state, and learn the operations, trouble shooting and related details of state-of-the-art instrumentations. The purpose of these fellowships is to strengthen the capacity of technical manpower in the effective and optimal use of expensive and sophisticated research equipments. For further details and application submission please visit <http://www.comstech.org/technical-personnels.aspx>

9. COMSTech in Collaboration with UoL Offers Research Fellowships

COMSTech in collaboration with the University of Lahore announces 10 research fellowships, 15 trainings and Indus-Nile forum for academic management training workshops for OIC least developed member states in Asia and Africa.



These scholarships are offered in health and education sectors. The avenues of collaborative efforts between the two institutions have been explored to benefit from mutual collaboration.



COMSTECH

COMSTECH Yearbook 2020

This was decided in a meeting held at COMSTECH between Coordinator General COMSTECH, Prof. Dr. M. Iqbal Choudhary and Mr. Awais Raoof, Chairman, BoG, The University of Lahore and Honorary Consul of the Republic of Uganda. Mr. Murtaza Noor, National Coordinator IUCPSS Pakistan, also attended the meeting.

10. COMSTECH Announces Award Winners

COMSTECH confers awards biennially in 'Basic Sciences' and in 'Excellence in Science and Technology' to recognize outstanding research work carried out by scientists who are citizen of, and working in, OIC member states.

In the category of basic sciences, awards are given in Biology, Chemistry, Physics and Mathematics. COMSTECH confers awards in two fields alternating biennially. Each award carries a cash prize of US\$5000, a shield of honor and certificate.

Basic sciences award of the year 2019, in the field of Mathematics won by Prof. Khalil Ezzinbi of Morocco and Dr. Sajad Jafri of Iran jointly, and Prof. Amer Iqbal of Pakistan won the award in Physics in this category.

Best young researcher award, best scientific book award, best research paper award and the award for patent are conferred under the category of excellence in science and technology.

The award of the year 2019 in the category of best young researcher won by Dr. Shafaqat Ali of Pakistan, best scientific book won by Prof. Ali Akhaddar of Morocco, and the patent award won jointly by Prof. Salman Alrokayan of Saudi Arabia and Prof. Sepideh Khoei of Iran.

Best research paper award, in biology won by Dr. Hammad Naveed of Pakistan, in Chemistry won by Prof. Farid Harraz of Egypt, in Mathematics won by Prof. Utkir A. Rozikov of Uzbekistan, and in Physics won by Dr. Seyed Hossein Hendi of Iran.



COMSTECH

COMSTECH Yearbook 2020

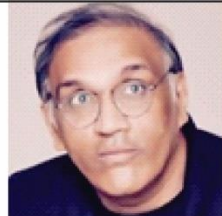
Awards for best researcher, best scientific book and the award for patent carry a cash prize of US\$ 3000 whereas the best research paper award carries a cash prize of US\$ 2000 along with a certificate and a shield of honor.



COMSTECH Award in Mathematics
Prof. Khalil Ezzinbi
Morocco



COMSTECH Award in Mathematics
Dr. Sajad Jafari
Iran



COMSTECH Award in Physics
Prof. Amer Iqbal
Pakistan



Best Scientific Book
Prof. Ali Akhaddar
Morocco



Young Researcher Award
Dr. Shafaqat Ali
Pakistan



Patent Award
Prof. Salman A. H.
Alrokayan
Saudi Arabia



Patent Award
Prof. Sepideh Khoei
Iran



Best Research Paper in Chemistry
Prof. Farid Harraz
Egypt



Best Research Paper in Biology
Dr. Hammad Naveed
Pakistan



Best Research Paper in Physics
Dr. Seyed Hossein
Hendi
Iran



Best Research Paper in Mathematics
Prof. Utkir A. Rozikov
Uzbekistan



COMSTECH

11. COMSTECH Annual Scholarships for Turkish Scholars

His Excellency Mr. Tolga Uçak, Consul General, Turkish Consulate General in Karachi visited International Center for Chemical and Biological Sciences, University of Karachi, Pakistan.

H. E. Prof. Dr. M. Iqbal Choudhary, Director ICCBS and Coordinator General COMSTECH, received the Consul General and briefed about the various projects and activities going on at the ICCBS as well as COMSTECH. It was indeed a very useful and pleasant meeting with lots of excellent ideas exchanged.



H. E. Prof. Dr. M. Iqbal Choudhary announced 5 annual research scholarships to the Turkish graduate and post-graduate scholars in the field of chemical and biological sciences at the ICCBS through TWAS/ COMSTECH fellowship programs. These students will be placed in various sections of ICCBS based on their fields of interest for 6-12 months. ICCBS will cover their bench fee, accommodation and research expenses.

Establishment of Pak-Turk Mirror Research Centers in the Field of Halal and Textile Product Development were also proposed.

Excellency the Consul General of Turkey, welcomed the proposals of collaboration and ensured the full support in both initiatives. He agreed to coordinate with Turkish universities and research institutions in this regard. A detailed discussion on the status of various clinical trials on COVID-19 drugs/ vaccines was also held.

12. COMSTech-IFS Fund Over US\$ 0.21 Million Science Projects in OIC States

COMSTech, Islamabad and International Foundation for Science (IFS), Stockholm, Sweden have selected seventeen research projects from 10 OIC member states – Benin, Burkina Faso, Cameroon, Cote d'Ivoire, Mozambique, Niger, Nigeria, Pakistan, Togo and Uganda for the session 2020. A total funding of US\$ 210,197 has been granted to these projects.

These projects have been granted in the fields of animal production, crop science, food science, forestry/ agroforestry, natural products and social science.

Project funding granted in this session ranges from US\$ 7,000 to 15,000 each project. Four Pakistani scientists have won grants worth Rs. 7.806 million for their research projects in this session.

COMSTech-IFS has so far financed 358 research projects in various disciplines of science and technology in 32 OIC member states by providing US\$ 3.898 million funds.

The 358 research projects from Afghanistan, Algeria, Bangladesh, Benin, Burkina Faso, Cameroon, Cote d'Ivoire, Djibouti, Egypt, Gabon, Gambia, Indonesia, Iran, Jordan, Lebanon, Malaysia, Mali, Mauritania, Morocco, Mozambique, Niger, Nigeria, Pakistan, Palestine, Senegal, Sierra Leone, Somali, Sudan, Suriname, Togo, Tunisia and Uganda have been financed under this program.

COMSTech and IFS agreed in February 1998 to enter into a collaborative program to strengthen the capacity in developing countries which are members of OIC to conduct relevant and high-quality research in sciences related to the management, use and conservation of biological resources. The program is funded in equal parts by COMSTech and IFS.



COMSTech

COMSTech Yearbook 2020

List of Research Projects supported by COMSTech-IFS during 2020

1. Benin

Fèmi Hounnou

School of Economics, Socio-Anthropology and Communication
for Rural Development

Faculty of Agronomic Sciences

University of Abomey-Calavi

Laboratory of Rural Economics and Farming Management

RIE1 Cotonou-Parakou, 03 BP 2819

Cotonou, Abomey-Calavi

Role of weather services in farmer's adaptive strategies to cope with climate change effects in Benin

In Benin, rural households and particularly those relying on agriculture for their livelihoods are heavily affected by the effects of climate, primarily through the food crop yield losses. Yet, the agricultural sector remains an important economic sector in Benin, employing almost three quarters of the population and generating 23% of the GDP. The development of agriculture has been shown significant factor-driven for food security and poverty alleviation in Africa countries. To deal with climate change effects, actions could be taken on adaptation or mitigation strategies. Adaptive strategies to climate change appears as the best ways to act, given the reality of climate change effects in the day after day farmer's experiences. Among those adaptive strategies, there is climate services that are considered helpful for vulnerable communities in developing countries to empower them to build their resilience to unpredictable climate risks and improve food security. This project aims to generate information susceptible to increase smallholder farmers' resilience to climate variability effects in

COMSTech Yearbook 2020

order to improve their livelihoods in Benin. In first step, smallholder farmers' classification will be elaborated using Factorial Analysis of Mix Data combined with a hierarchical classification on principal components. Second, the study aims to show what kind of climate service the smallholder farmers are needed or preferred to adapt to climate variability. For this purpose, the preference and expectation analysis will be realized with the intention of proposing to policymakers the farmer climate service's need. In addition, the importance of different components of climate service will be firstly analyzed to show the weighting of each of them among smallholder farmers in Benin. Lastly, the smallholder farmers' willingness to pay (WTP) for climate service will be assessed using a stated preference approach, discrete choice experiments. Additionally, environmental and socioeconomic factors which explain smallholder farmers' WTP will be analyzed.

2. Benin

Marsanne G. B. Allakonon

Doctoral School of Agronomy and Water Sciences

Faculty of Agronomy

Laboratory of Hydraulics and Environmental Modeling

University of Parakou

Parakou, Banikanni, 03 BP 351 Parakou, Parakou

Maize deficit irrigation to improve crop productivity and reduce water loss and soil nutrient mining in Northern Benin

Regarding the impacts of water shortages that result from climate change and variability on crop production in West Africa (WA), the increasing population to feed absolutely, and the pressures on water and land resources, increasing crop production in a sustainable way is urgent. But this often requires



turning disadvantages to opportunities for adaptation. This project aims at developing a deficit irrigation (DI) scheduling on maize, based on the crop growth stages, and evaluating environmental impacts of DI, through experiments and modeling. Two experiments will be conducted in two dry seasons, under rainshelter, for assessing maize response to DI, and the impacts of DI on soil nutrients content. Crop growth parameters as well as plant nutrient status, soil nutrient balance will be collected. Experimental data will be used to calibrate and validate the FAO Aquacrop model for developing DI scheduling, and to identify an optimum deficit level for limiting yield loss. We will use ANOVA, and regression tests for analysing experiment data, and indicators as RMSE, MAE, Index of agreement for assessing model performance. Major project outputs will be two scientific papers published, first presenting the development of an irrigation scheduling to improve maize production in WA, and the second, presenting soil nutrient balance under DI. These outputs will raise scientific awareness on the need to turn challenges that represent water shortages into opportunities for crop production, and will contribute to the scientific knowledge on DI effect on soil nutrient status. The research project will last for 19 months.

3. Burkina Faso

S. Amidou Ouili

Centre de Recherche en Sciences Biologiques, Alimentaires et Nutritionnelles (CRSBAN)

Boulevard Charles de Gaulle

03 BP 7021 Ouaga 03, Ouagadougou

Distribution of post-harvest fungi and assessment of mycotoxin contamination in bambara groundnut and cowpea produced in Burkina Faso

COMSTech Yearbook 2020

Legumes such as bambara groundnut and cowpea are popular foods for people in sub-Saharan Africa. In Burkina Faso, they represent the two main food legumes used by the populations, especially in rural areas during the dry season. Unfortunately, the sector is experiencing enormous losses during storage due to the action of pests such as fungi, which lead to the deterioration of the nutritional value and organoleptic quality of the crops. In addition, their growth inside the seeds is often accompanied by the production of mycotoxins, which are toxic substances at low doses, known mainly for their poisoning effects on vertebrates. Traditional storage methods exist but they do not always provide the expected protection for seeds, which exacerbates the vulnerability of populations. Therefore, the objective of this project is to contribute to increasing and securing sustainable production of bambara groundnut and cowpea and to preserve the health of consumers. Our approach will consist in making an inventory and characterization of fungi infecting bambara groundnut and cowpea seeds, evaluating the mycotoxin content of these seeds and proposing new techniques for their storage. This inventory and characterization activities will (i) identify fungi associated with bambara groundnut and cowpea seeds in Burkina Faso and (ii) isolate the main mycotoxinogenic strains. (iii) The quantification of mycotoxins will make it possible to collect data for the information and sensitization of populations. (iv) The storage techniques that will be proposed will contribute to limit the depredation of seeds and thus contribute to food security.

4. Burkina Faso

Agbémébia Yawovi Akakpo

Training and Research Unit in Earth and Biological Sciences

Research Center in Biological Food and Nutritional Sciences of
University

Joseph KI-ZERBO, Zogona

03BP 7131 Ouagadougou, Ouagadougou



COMSTech

COMSTech Yearbook 2020

Development of nanoemulsion oil formulation from Cymbopogon citratus essential oils and application into fresh soymilk and tiger-nut milk produce in Burkina Faso

Soymilk and tiger-nut milk are key ingredient and have a great interest sources due to their high nutritional values and economic potentials in the diet of several African countries. In Burkina Faso, the fresh milks are processed into natural fresh beverage by traditional methods without significance sterilization process to prevent microbial contamination and offer a short time of storage especially in case where no cold system is applied. The main difficulties is the storage conditions of the milk and it spoilage. Due to this difficulties, the milk, are produced only for some event by some local manufacturing unit and others women. So, there were many attempts to industrialize the locally prepared tiger-nut milk and soymilk, but the inability to preserve the milks for a long time without spoilage has been a major problem. The use of emergent technique combine with essential oils is the one promote approach for beverage safety. This study aimed to increase inhibitory potency and bioavailability of Cymbopogon citratus essential oils for soymilk and tiger-nut milk preservation. To conduit this project, the essential oils will be formulate into nanoemulsion using natural edible coating ingredients to increase it bioactivity, inhibitory potency and bioavailability. The physicochemical and microbiological analyzes will be carry out according to standard methods. The project will be carry out by using laboratory material, stocks and travelling allowance all for a total account of 5327.37 Dollars US.

5. Cameroon

Nadege Kouemou Emegam

University of Buea

Molyko, 63, BUEA

Effect of aqueous extract of *Dichrocephala integrifolia* on alcohol-induced behavioural and cognitive deficits in mice

Alcohol consumption worldwide has gradually increased during the last decades despite the economic, social and health problems associated to it. Alcohol misuses are associated to multiple organs pathologies, including brain. There is a close relationship between misuses of alcohol and a range of psychiatric disorders. In fact, long term use of alcohol lead to structural and functional brain damages which lead to different behavioural and cognitive disabilities, such as delusion, hallucination, anxiety, poor judgement and memory impairment. Furthermore, many household's violences, suicides, road accidents, unwanted pregnancies, poor academic performances and premature deaths have their roots from heavy ethanol consumption. There are different attempts in developed countries to manage the misuses of alcohol, this is not always the case in developing countries in general and in Cameroon in particular. This project aims to evaluate the effects of *Dichrocephala integrifolia*, a local medicinal plant on alcohol-induced behavioural and cognitive deficits in mice. The approach of methodology will be behavioural, biochemical and histopathological. This project will be conducted over 21 months in the laboratories of the University of Buea (Cameroon) for a total cost of 15000 USD. The results of this study will help to set the baseline guidelines towards mitigating the toxic effects of alcohol consumption among the local population of Buea, the results could also lead to drug discovery and development to support the local as well as international public health efforts.

6. Cameroon

Roli Karole Tsatsop Tsague

Applied Chemistry



COMSTech

COMSTech Yearbook 2020

National Advanced School of Agro-Industrial Sciences

University of Ngaoundere

Ngaoundere III, +237, Ngaoundere

Spray drying of indigenous fruit juices of *Lannea microcarpa* and *Carissa edulis* with carrier agents (carbohydrates, gums) of Cameroonian plants

Currently in North region of Cameroon, the consumption of fruits of *Lannea microcarpa* and *Carissa edulis* has increased due to the growing enlightenment of their nutritional and therapeutic value. However, there is a problem of spoilage of these seasonal indigenous fruits. Thus, value addition of the product by drying process suggests a greater scope for elevating the utilization of fruits and vegetables into development of quality products. The aim of this work is to look for the best aid-dryer and spray drying process conditions on the formulation of powder of *L. microcarpa* and *C. edulis*. A fractional factorial design will be used to select the best encapsulating drying agent among maltodextrin, starches and natural gums (Arabic gum and *Triumpheta cordifolia* gum). Then, a second factorial design will be used to study the level of influence of process parameters (inlet air temperature, outlet air temperature, atomization speed and the flow of the extract to the chamber). Thirdly, a centered composite design will be used for the optimization of the formulation of powders by microencapsulation varying the factors of the atomization process. These factors are parameters studied previously (inlet air temperature, outlet air temperature, atomization speed and/or flow of extracts). The responses to be follow during the study are the flavonoid content in powder, moisture, hygroscopicity, solubility and powder yield. The optimal conditions which will be obtained will be used to produce the powder of *L. microcarpa* and *C. edulis* fruit juices, more available to respond to the need of population.

7. Cote d'Ivoire

Amenan Fabienne Anne-Julie N'ZI
University Nangui Abrogoua
Abobo-Adjamé, 02 BP 801 Abidjan
Abidjan

Characterization of Bacillus cereus group species isolated from artisanal infant flours in Côte d'Ivoire

In order to contribute to the safety of infant flours, WHO recommends for breast-milk supplements, foods of both nutritional and sanitary quality. Also, because of their weak economic situations, the populations resort to artisanal infant flours which generally have insufficiencies. Although efforts are increasingly being made to correct nutritional composition defects, this is not always the case in terms of their health characteristics. Different pathogens and especially sporulating bacteria such as *Bacillus cereus* can be found in flours and cause harm to children. The aim of this project is to reduce the risk of *Bacillus cereus* food poisoning linked to the consumption of homemade infant flour in infants and young children in Cote d'Ivoire. To do so, an investigation will be conducted in different regions to determine infant flours production systems as well as factors or practices that promote contamination by *B. cereus* group. The prevalence and genetic diversity of this taxonomic group will be also studied. Similarly, the thermal resistance and growth parameters of *B. cereus* spores in infant flours will be evaluated. Finally, strains of lactic acid bacteria capable of inhibiting the growth of toxigenic *B. cereus* strains will be proposed.

8. Mozambique

Gaby Monteiro
Veterinary Faculty



University Eduardo Mondlane
Avenida de Moçambique km 1.5
257, Maputo

Development and validation of a novel virus neutralization test for Rift Valley Fever diagnose

Zoonotic vector borne diseases such as Dengue, Chikungunya, Rift Valley fever (RVF) emerged In Mozambique during the last years. This emergence is related to the increase in deforestation, intense globalization, unplanned urbanization and global warming. In this project, we will focus on RVF Virus (RVFV), a neglected infectious disease in Africa. The real threat posed by RVFV, coupled with the fact that there are no effective licensed vaccines for human use, clearly illustrate the need for more RVFV diagnose and vaccine research. The goal of this project is to study the potential of an attenuated virus, as an alternative resource for Serum Neutralization Test. The serum neutralization test is the gold standard test for RVFV confirmation diagnose. The classical VNTs make use of a virulent RVFV and therefore have to be performed in BSL-3 laboratories. The aim of this project is to develop a novel VNT that is based on the attenuated recombinant RVFV. Upon development, the test will be validated by testing blind samples from other three laboratories that perform the VNT in different formats. The sensitivity and specificity of this tests will be accessed. This novel test has the advantage that can be performed in a BSL-2 laboratory, making it suitable for other virology laboratories in Mozambique and in Sub-Saharan Africa. The results from this project will contribute to build capacity in diagnose and consequently increase our preparedness for prevention and control of RVFV in the event of an outbreak. In addition, this study will open new perspectives for research on RVFV and other vector borne diseases.

9. Niger

Oumarou Zango

Sciences de la Vie et la Terre

Faculté des Sciences et Techniques

Université de Zinder, BP:656, Zinder, Niger

00227, Zinder

Quality and establishment of a pollen bank of date palms in Sahel area

In Sahel, ongoing climate change has caused droughts in recent decades that have made people very vulnerable to famine. In this context, date palm, an emblematic species of arid zones and of great phenological plasticity, can constitute an alternative in Sahelian agriculture. Date palm is a dioecious species, whose male organs and female organs are carried by different feet. For it to have production dates, a food of high nutritional value, it is necessary that both feet are on the same ground and with synchronous flowering. In Sahel, date palm has two production seasons, of which the most productive in quantity, produces dates of very poor quality because of the rains arrival. The second season ending in the dry season is the least productive in quantity, but is the most profitable. It mainly concerns female feet and less male feet, thus less pollen available. The main objective of this project is to bring innovative solutions to date production in order to improve the food security and incomes of poor peasants in the Sahel. Thus, to overcome this lack of pollen essential for fertilization and the quality of the dates produced, we will collect pollen and look for the best male spawners and the best way of its conservation in Sahelian environment to ensure its continued availability to farmers. Finally, we expect to find the best means of preserving pollen and male spawners of interest for the production of dates in quantity and quality in the dry season.

**10. Nigeria**

Jeremiah Olugbami
Department of Biochemistry
Faculty of Basic Medical Sciences
University of Ibadan
Biochemistry Department Street
200005, Ibadan

Inhibition of cancer metastasis by natural products via selective targeting of drivers of actin cytoskeletal remodelling and immuneboosting

Cancer is a deadly disease that is prevalent in both developed and developing countries. Unfortunately, surgical and traditional therapeutic approaches (chemotherapy and radiation) are, at present, not able to control most of the cancer types. Chemotherapy is the application of drugs with the intention of killing cancer cells alone. However, other normal body cells are not spared by these drugs. Hence, the need for an alternative approach which will not affect normal cells. On the one hand, chemoprevention is a modality that involves the administration of non-toxic agents to individuals who may be at an increased risk for cancer development. Such agents are mostly derived from naturally-occurring sources which are therapeutically effective, culturally acceptable and economically accessible. On the other hand, compelling and overwhelming scientific evidence have clearly demonstrated that cancer metastasis is responsible for the greatest number of cancer deaths. However, a principal process in the initiation of cancer metastasis is the remodelling of actin cytoskeleton. Furthermore, one of the main drivers of this process is the Rho family of GTPases (Rac1, Cdc42, and RhoA) which has been reported to cause an overhauling of actin filaments and cell adhesions when they are manipulated.

COMSTECH Yearbook 2020

For these reasons, targeting proteins that promote cancer metastasis may potentially result in better therapeutic strategies. In addition, immune inhibitory receptors, CTLA-4 and PD-1, are known to downregulate immunological responses. Therefore, this research work is focused on isolating the specific metastasis-inhibiting agents with immune-boosting activities contained in plant extracts that have already been scientifically validated to possess anti-cancer activities. Special interests will be given to cancers of the liver and breast.

11. Pakistan

Hammad Ismail

University of Gujrat

Umar Al Khayam Block

50700, Gujrat

Bioassays guided isolation and identification of anti-Alzheimer compounds from Berberis lyceum

Medicinal plants are key source of compounds used for the treatment of different health disorders. Berberis lyceum, is an indigenous plant of Pakistan having many therapeutic potentials and is also being used against various diseases by local practitioners since centuries. B. lyceum preparations has been used against sore and swollen eyes, wounds, broken bones, curative piles, gonorrhea, acute conjunctive, unhealthy ulcers and in chronic ophthalmia. Therefore, in the present study, we intend to investigate the anti-Alzheimer's potential effect of the extract of B. lyceum through evaluation of acetylcholinesterase activity, protection effect against aluminium chloride induce neurotoxicity, and the identification of the main constituents. Enzyme activity-based fractionation, purification and characterization processes will be used to isolate the anti-



Alzheimer active compounds from *B. lyceum* by using different chromatographic techniques. The isolated compounds will be identified by analyzing spectral data (UV, NMR and MS). The identified compounds will be evaluated for anti-Alzheimer's potential by different behavioral assays. Then these compounds will be subjected to aluminium chloride induce Alzheimer's rat to determine enzyme inhibition and neurotransmitter activity by HPLC in rats blood and brain tissues. Finally, to determine the mechanism of action of these compounds the Western Blotting studies will be carried out on the protein extracted from rat tissues. In conclusion, based on ethnopharmacological study, we believe that the compounds isolated from *Berberis lyceum* will have positive effect for the management of Alzheimer's disease.

12. Pakistan

Iqra Sarfraz

Department of Zoology

Faculty of Life Sciences

Government College University Faisalabd

Kotwali Road, 38000, Faisalabad

Transforming fruit waste biomass into health dietary supplements for cancer treatment

The development of cancer-specific therapeutics has been limited because most of healthy cells and cancer cells depend on common pathways. The recent evidences suggest that targeting the cancer metabolism may offer selectivity in cancer treatment. Thus, therapies targeting novel modes of action are greatly needed. Targeting tumor metabolism may offer a selective and efficacious anti-cancer therapy because metabolic enzymes could be easier target as correlated to signaling proteins and transcription factors. It may be likely to identify inhibitors to

COMSTech Yearbook 2020

achieve broad therapeutic window for the treatment of cancer as correlated to conventional chemo-therapies. One of the promising novel anti-cancer drug targets is Pyruvate Kinase M2 (PKM2). PKM2 predominantly overexpress in a number of tumor types and its inhibition results in decreased tumor growth and metastasis. Therefore, the aim of this project is to identify potent inhibitors of PKM2 from fruit waste biomass, prepare the enriched extracts of PKM2 inhibitors by using green chemistry approaches and demonstrate their therapeutic value for cancer treatment. These enriched extracts of PKM2 inhibitors with other therapeutics drug combinations will counteract drug resistance and maximal clinical efficacy. This drug discovery approach of selectively targeting tumor metabolism by fruit waste biomass derived enriched extracts/ health products represents a paradigm shift to develop new therapeutics, ultimately addressing the concerns for cost, toxicity, non-selectivity and resistance of available chemo drugs which have restricted their widespread application and efficacy.

13. Pakistan

Bina Zarif

COMSATS University Islamabad

Park Road, 45550

Islamabad

Nano-nutraceuticals for sustainable food enrichment: a step to target Hidden Hunger

Micronutrients deficiency, collectively called as “hidden hunger” is widespread among developing countries. The nutritional insecurity caused by deficiencies of vitamins and minerals which are active constituents (nutraceuticals) of food products affects people of all age and gender. Liposoluble Vitamin A deficiency



(VAD) and Vitamin D deficiency (VDD) are leading causes of many chronic diseases including macular degeneration, osteoporosis, cancer and heart diseases. These vitamins (A and D) are not soluble in aqueous gastrointestinal environment, are very sensitive and unstable when exposed to inadequate conditions such as heat and light. Bioaccessibility of these essential nutrients is often compromised due to partial release from the food, enzymatic degradation, very low absorption in intestinal epithelium and metabolism within the gastrointestinal tract (GIT). Therefore, supplementation is not effective enough to improve the efficacy of these liposoluble vitamins. Bioaccessibility of nutraceuticals can be significantly improved by protecting their nutritional properties against degradation by nano-encapsulation. Therefore, an effective strategy to preserve the bioactivity of these nutraceuticals is their delivery in bio-based nanocarrier systems. The main objective of the project is to develop milk polymers (milk proteins, milk phospholipids) and polysaccharides-based food-grade nanocarrier systems to achieve the sustained release and enhanced absorption of deficient micronutrients (Vitamin A and D) in GIT conditions. An innovative aspect of the proposed research is the micronutrients enrichment of baby food formulations without influencing the natural balance of milk. Hence, the proposed research has the potential to combat micronutrient deficiency in local populations to overcome the escalating rate of retarded growth.

14. Pakistan

Allah Ditta

Plant Breeding and Genetics Division

Nuclear Institute for Agriculture and Biology (NIAB)

P.O. Box 128, Jhang Road

38000, Faisalabad



Transcriptome profiling and characterization of cotton germplasm for salt tolerance in Pakistan

Cotton (*Gossypium*) is an ideal plant for polyploidization study because of its allopolyploidization, which provides thousands of duplicated genes with dissimilar expression level. Cotton yields are stagnant for the last several years due to a number of factors including salt stress. Salinity is a big threat to world agriculture. It imposes a major setback in increasing the yield of cotton. This crop is very sensitive to salinity at germination and seedling stage. Salt stress adversely affects the biomass production, i.e., decrease in leaf area, stem thickness, shoot and root weight and ultimately brings about decrease in seed cotton yield. A threshold salinity level at which initial yield of cotton declines is 7.7 dS m⁻¹ with a 50% reduction in yield at 17.0 dS m⁻¹. NIAB has good source of cotton germplasm with high yield profile. Previously, three cotton varieties i.e. NIAB-78, NIAB-999 and NIAB-111 were found salt tolerant. These were used as recurrent parent in the development of recent high yielding varieties which are covering about 41% area of cotton cultivation in Punjab and Sindh. The development of varieties is purely based on conventional means and no single study has been conducted at molecular level to validate their salt tolerance. That is why the project has been planned to find out the gene(s) associated with salt tolerance of *G. hirsutum* and to unravel the pathway(s) involved in gene action for salt tolerance of existing cotton germplasm at NIAB, Pakistan. Next generation sequencing (NGS) technologies by using RNA-seq data will be utilized to explore and understand the nature of the genes involved in salt tolerance. Once the salt tolerant genes are identified, the information can be then used in PCR/RT-PCR for routine detection and understanding gene expression. Better understanding of the genes and their action(s) will be helpful in devising management strategies. Moreover, once the gene(s) associated with salt tolerance gets characterized and nuclear sequences are known, further work for developing molecular



diagnostic tools, identification of its alternate pathway(s) and studying salt interaction in cotton can be established. The proposed research will also help the cotton breeders to identify definite resistance sources which will be recommended for cultivation in saline-alkali land of Pakistan. Therefore, eventually not only enhances national/international cotton production but also boost farmer's income and will alleviate poverty.

15. Togo

Kaina Ayeki

Faculté Des sciences

Université de Lomé

Boulevard Gnassingbe Eyadema

O1BP1515, Lomé

Sustainability of Fuelwood Production Systems and Supply Chains in the Central Region of Togo

In the context of climate change and challenges related to sustainable development, a particular attention is given to renewable energies, especially wood or biomass energy. In Togo, biomass is the main source of energy for a great proportion of the population. However, the exploitation of wood energy is the main cause of forest degradation and deforestation, for it is not done in a sustainable way. In this regard, it is desirable to undertake studies to better understand the biomass energy production systems and the viability of the supply chains towards a better formulation of policy relevant guidance. This study will be carried out in the central region of Togo, one of the largest wood energy production basins. It aims to contribute to a better knowledge on biomass energy production models towards the development of new paradigms for sustainability in the management of ecosystems and the wood energy sector in Togo. The specific objectives are to (i) map the wood energy

COMSTech Yearbook 2020

production basins at the region scale, (ii) undertake a characterisation of production models based on surveys (ethnobotanical and socio-economic), (iii) analyse the sustainability of the wood energy sector through inventories (forestry and floristics). The final outcome of this research is to promote models for paradigm shift for sustainable biomass energy production systems in Togo.

16. Uganda

Stellah Byakika

College of Agricultural and Environmental Sciences

Makerere University Kampala

Mary Stuart Road, 256, Kampala

Starter culture development and improvement of safety of commercially produced Bongo, a fermented dairy product from Uganda

Bongo is a traditional fermented drink from Uganda made by spontaneous fermentation of cow's milk. This nature of fermentation is responsible for the inconsistent quality and short shelf life Bongo. It is also noteworthy that some processors use un-boiled milk which also comprises consumer safety. Bongo, originally consumed in rural areas, is gaining popularity among urban dwellers. Consequently, there is increasing haphazard production of the product in various cities in Uganda. Moreover, the food safety regulatory agencies neither monitor its production nor have a relevant quality standard. Currently, literature on Bongo is limited, so a comprehensive study on evaluation and improvement of its quality (sensory, microbial pathogens and aflatoxins) is required. This study seeks to examine the quality of commercially produced Bongo, isolate and develop starter cultures for the product. Microbial



enumeration and detection will be performed by agar plating as described by the International Organization for Standardization methods. Microbial identification will be done using biochemical and molecular methods. Aflatoxin M1 will be determined using the competitive Enzyme-Linked Immuno Sorbent Assay. Bongo producers will be trained in good manufacturing practices and use of a defined starter culture. Trainings will involve theoretical and practical demonstrations. The findings of this study will be used to draft a national quality standard for Bongo. Consequently; this research will contribute to improvement of the dairy sector in Uganda. There will an upgrade in the quality (sensory and safety) of Bongo on the market and this will in turn generate more income for the processors.

17. Uganda

Susan Diana Kerfua

National Livestock Resources Research Institute

Nakyesasa, 256, Wakiso

Evaluation of immune response of 6-12 month old calves to serotype O strain of the foot-and-mouth disease trivalent vaccine used in Uganda

Foot-and-mouth disease (FMD) is a highly contagious disease affecting cloven hooved animals with serious economic consequences for farmers and governments. The Aphthovirus exists in seven serotypes (O, A, C, SAT1, SAT2, SAT3 and Asia 1) that do not cross-protect. Uganda has had up to six serotypes in circulation with serotype O being the most prevalent. The vaccine currently used has only serotypes O, SAT 1 and SAT 2, whilst cross-protection between strains within a serotype can be incomplete. The Government of Uganda spends US \$58,000 to \$1,088,820 per annum on vaccination and the country is at stage 2 of the Progressive Control Pathway for FMD (PCP-FMD). A key

COMSTech Yearbook 2020

aim is to ensure that vaccination programs are effective. However, the efficacy and effectiveness of vaccines used in the country have not been extensively studied, even though antigenic differences between the FMDV strains in the trivalent vaccine have been detected compared to recently circulating Ugandan viruses. This study will characterize the post-vaccination antibody responses of 6-12 month old calves over a eight month period to determine what protection can be expected. After vaccinating the calves, sera will be collected at days 28, 56, 168 and 224 post vaccination. Samples will be analyzed using ELISA for both structural and nonstructural proteins. The sera will be archived and if further funding can be obtained, they will also be tested by virus neutralization tests against a range of relevant FMDV field strains, through collaboration with an international reference laboratory.

13. COMSTech Confers Awards on OIC Scientists

COMSTech conferred awards in the categories of basic sciences and excellence in science and technology to the award laureates from Algeria, Egypt, Iran, and Turkey in a ceremony held at COMSTech on November 11, 2020. The award shields and certificates were presented to the Ambassadors of the respective countries by the Coordinator General, COMSTech Prof. Dr. M. Iqbal Choudhary.

H. E. Mr. Ibrahim Said, Deputy Head of Mission, Embassy of Egypt, received the awards on behalf of Egyptian award winners. H.E. Mr. Amrane Foudil, Deputy Head of Mission, Embassy of Algeria received the award on behalf of Algerian award winner, and H. E. Mrs. Esra Sen, Deputy Head of Mission, Embassy of Turkey, received the award on behalf of Turkish award winner.

COMSTech decided in 1996 to institute science awards to recognize outstanding research work carried out by the scientists who are citizens



COMSTech

COMSTech Yearbook 2020

of, and working in, OIC member states. Each award carries a certificate, shield of honor and a cash prize. These awards are conferred upon the recipients by H.E. President of Pakistan (Chairman COMSTech).



In the category of basic sciences COMSTech awards in four basic fields; Biology, Chemistry, Mathematics, and Physics. Each award carries a cash prize of US\$ 5000.

Dr. Ramy Karam Aziz Henein of Egypt won the basic sciences award in biology and Dr. Engin Umut Akkaya of Turkey, in Chemistry.

Best Young Researcher Award, Best Scientific Book Award, Award for Patent, and Best Research Paper Award are conferred under the category of excellence in science and technology. Each award carries a cash prize along with a shield of honor and a certificate of recognition.

Dr. Mehmet Atilla Tasdelen of Turkey and Dr. Farrokh Aminifar of Iran won the young researcher award. The Best Scientific Book award won by Dr. Salah Sabry Ahmed Obayya, Patent Award won Dr. Ibrahim El-Sherbiny, Best Research Paper in Biology award won by Dr. Maha Nasr Sayed Aly, and the Best Research Paper in Chemistry award won by Dr. Mohamed H. Alkordi, of

COMSTech Yearbook 2020

Egypt. The Best Research Paper in Physics award won by Dr. Abdelaali Boudjemaa of Algeria.



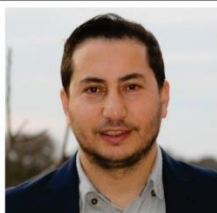
COMSTech Award in Biology
Dr. Ramy Karam Aziz Henein
Cairo University
Egypt



COMSTech Award in Chemistry
Dr. Engin Umut Akkaya
Bilkent University
Turkey



Young Researcher Award (Shared ½)
Dr. Farrokh Aminifar
University of Tehran
Iran



Young Researcher Award (Shared ½)
Dr. Mehmet Atilla Tasdelen
Yalova University
Turkey



Best Scientific Book
Dr. Salah Sabry Ahmed Obayya
Zewail City of S & T
Egypt



Patent Award
Dr. Ibrahim El-Sherbiny
Zewail City of Science and Technology
Egypt



Best Research Paper in Biology
Dr. Maha Nasr Sayed Aly
Ain Shams University
Egypt



Best Research Paper in Chemistry
Dr. Mohamed H. Alkordi
Zewail City of Science and Technology
Egypt



Best Research Paper in Physics
Dr. Abdelaali Boudjemaa
Hassiba Benbouali University of Chlef
Algeria



COMSTECH

COMSTECH Yearbook 2020

14. COMSTECH and MoFA launched COMSTECH Consortium of Excellence (CCoE)

COMSTECH and Ministry of Foreign Affairs, Government of Pakistan launched “COMSTECH Consortium of Excellence (CCoE)” comprising upon leading academic and research institutions of Pakistan and OIC member states in the fields of science, technology, engineering and mathematics.



The launching ceremony of CCoE held at COMSTECH under the chairmanship of Coordinator General, COMSTECH, Prof. Dr. M. Iqbal Choudhary while Mr. Sohail Mahmood, Foreign Secretary of Pakistan was the chief guest.

The Vice Chancellors and senior officials of Quaid e Azam University, Islamia University Bahawalpur, National University of Sciences and Technology, Government College University, Lahore, Ghulam Ishaq Khan Institute of Engineering Sciences and Technology, Pakistan Institute of Nuclear Science and Technology, NED University of Engineering and Technology, Lahore University of Management Sciences, Bahauddin Zakariya University, Multan, and University of the Punjab participated in the launching ceremony of CCoE.

COMSTECH Yearbook 2020



In his inaugural address, Prof. Dr. Iqbal Choudhary, said the purpose of CCoE is to put our efforts to achieve excellence in partnership. He said that Pakistan has done a lot in the area of science and technology and now it's time to reap the benefit by showcasing the progress of Pakistan. He said that this forum would bring technology to Pakistan and would help in internationalization of the areas of science, technology, engineering and mathematics. The COMSTECH - MoFA collaboration will open new avenues in science diplomacy. Dr. Iqbal mentioned that COMSTECH being the apex body in OIC science arena gives Pakistan a leading role in the area of science technology and innovation. He discussed the current state of OIC member states in the field of science and technology and provided a comprehensive report of COMSTECH activities.

CCoE is launched under the “Science Diplomacy Initiative” of the Ministry of Foreign Affairs (MoFA), Government of Pakistan. Mr. Sohail Mahmood, Foreign Secretary of Pakistan said that the higher education institutions are shaping the future of Pakistan. He said that the CCoE initiative is conceived to provide the platform to the leading universities of Pakistan and the universities of the OIC member states to cooperate, collaborate and showcase their achievements. He informed that the MoFA has launched multipurpose science diplomacy initiative to create linkages between partners and popularize science. He said that



COMSTECH

COMSTECH Yearbook 2020

this forum will help in trade boost. The Foreign Secretary mentioned that COMSTECH has responsibility to enhance science, technology and innovation in OIC member states and commended the current efforts of COMSTECH and its leadership for initiating new projects like CCoE.

Vice chancellors and senior officials of the CCoE founding member universities of Pakistan shared their current programmes and offered cooperation and support to collaborate and cooperate under the umbrella of CCoE.

15. COMSTECH Posters – insights into development of OIC states

COMSTECH posters highlighting insights into development of OIC states were updated with latest data available in 2020. There are 57 posters, one for each OIC member state. Each poster contains more than 36 socio-economic development indicators.

COMSTECH signed MoUs with different organizations

16. COMSTECH and Pink Pakistan Trust Signed MoU to Achieve SDGs and Promote Women Wellbeing in Muslim Countries

COMSTECH and Pink Pakistan Trust have agreed to work towards the achievement of shared objectives of good health and wellbeing of women in OIC region. Particularly, they will work together for spreading awareness to reduce the mortality rate of breast cancer and promote women wellbeing and empowerment. The MoU between the two organizations signed by Coordinator General, COMSTECH, Prof. Dr. M. Iqbal Choudhary and the President Pink Trust Pakistan, Dr. Zubaida Qazi, here on Tuesday, October 13, 2020 at COMSTECH headquarters, Islamabad.

COMSTECH Yearbook 2020

Both the Parties will jointly organize awareness sessions, seminars, conferences, workshops and training research and counseling support for eradicating breast cancer to the women of the marginalized communities of the OIC member countries.



COMSTECH through its various Inter-islamic Networks and programmes shall partner with the Pink Foundation towards spreading awareness regarding breast cancer and early detection of breast cancer purely on voluntary basis for the welfare and wellbeing of marginalized communities to work for the noble cause.

17. COMSTECH and International Turkic Academy enter into MoU

International Turkic Academy and COMSTECH sign MoU at COMSTECH Secretariat on December 23 to strengthen cooperation and collaboration for the promotion of science & technology in OIC member states.

On the occasion of MoU signing ceremony, President of the Int'l Turkic Academy, Dr. Darkhan Kydyrali, appreciated COMSTECH for holding Al-Farabi forum successfully.



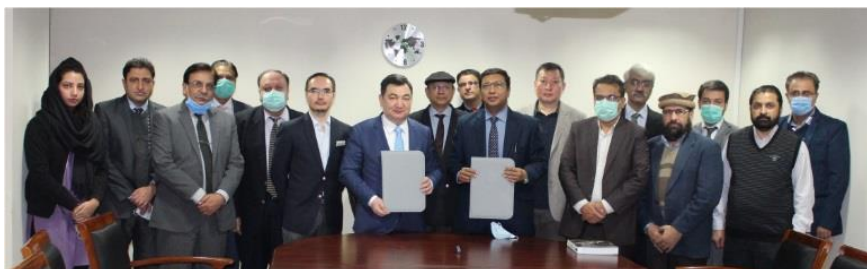
COMSTECH

COMSTECH Yearbook 2020



Dr. Kydyrali said that our relations are not only limited to the relations between institutions, we have great relationship between nations. He assured that on his return he will meet with the president of Kazakhstan to share these activities with him. He said we have signed many MoUs with different institutions of Pakistan. He said that he strongly believes that COMSTECH will play a strong role for further enhancing the Pak-Kazak relations.

Coordinator General COMSTECH, Prof. Dr. M. Iqbal Choudhary appreciated the organization of OIC Science Summit by Kazakhstan in 2017. He said that we will soon organize an international forum on Dr. Allama Muhammad Iqbal in collaboration with international Turkic Academy, Kazakhstan. Dr. Iqbal assured that we will be partner in these activities.



Both institutions have agreed to be engaged in various joint activities such as organizing forums on Al-Farabi, Allama Muhammad Iqbal, and Ulugh Beg Mirza and establishing Turkic Academy Library at COMSTECH and incorporating leading universities of Pakistan in the network of universities of International Turkic Academy.

COMSTECH Yearbook 2020

The Turkic Academy was founded on 25 May 2010 at the Palace of Peace and Reconciliation in the capital of the Republic of Kazakhstan.

18. COMSTECH and Al-Shifa Eye Trust inked MoU to enhance research in ophthalmology and prevent blindness in OIC member states

Al-Shifa Trust Eye Hospital, Rawalpindi and COMSTECH — OIC Ministerial Standing Committee on Scientific and Technological Cooperation — Islamabad, signed an MoU to build capacity in ophthalmology and prevent blindness in OIC member states through providing training and conducting eye camps in different OIC member states.

The MoU ceremony held at COMSTECH headquarters and signed by Prof. Dr. M. Iqbal Choudhary, Coordinator General, COMSTECH and Maj. Gen. Rehmat Khan (R), President, Al-Shifa Trust Eye Hospital, Rawalpindi. The Vice-Chancellor of the University of The Gambia, Prof. Dr. Faqir Muhammad Anjum and Mr. Mohammad Adeel, Assistant Director, Science Diplomacy, Ministry of Foreign Affairs, Pakistan were also present at the occasion.

According to the MoU, Pakistan Institute of Ophthalmology (PIO) the academic wing of Al-Shifa Trust Eye Hospital will impart training in ophthalmology, optometry and orthoptics, public health, ophthalmologists, ophthalmic technicians, bio-medical technicians, ophthalmic nurses and ophthalmic nursing assistants of OIC region.

Al-Shifa Trust eye hospital will offer observerships for 4-12 weeks and 1-year clinical fellowships to candidates from OIC countries in the subspecialties, such as cornea and refractive



COMSTech

COMSTech Yearbook 2020

surgery, Vitreo-retina, Pediatric ophthalmology, Glaucoma and Orbit and Oculoplastic.



Al-Shifa center for community ophthalmology will carry out wide-spread outreach programs for the prevention of blindness in OIC member states. A delegation of highly qualified and experienced surgeons will be sent to the pre-

selected OIC member states to undertake surgical camps for cataract as well as perform advanced surgical procedures for diseases such as Cornea, Glaucoma, Obits and Oculoplastic, Vitreo-retina, Pediatric eye disorders and, Ocular oncology.



Eye camps in Kampala, (Uganda) Niamey, (Niger) and Serrekunda, (Gambia) will be organized this year.

Special emphasis will be given to carry out research in areas of Ocular Epidemiological Studies, Ocular Imaging, Ocular Genetics, Data Analytics, Cytokines and Biomarkers for Ocular Pathologies, Clinical Trials, Clinical Studies and Ocular Therapeutics.

COMSTech would provide Al-Shifa Trust support, cooperation, and collaboration for all activities planned and organized in OIC member states.

COMSTECH Yearbook 2020

Interested OIC member states are requested to contact Dean, Pakistan Institute of ophthalmology at following Email: drwajidalikhan@yahoo.com ☐

Exhibitions, workshops and courses conducted

19. Prime Minister visits MoST exhibition on COVID-19 related products at COMSTECH

The Prime Minister of Pakistan visited exhibition on COVID-19 organized by Ministry of Science and Technology at COMSTECH. The Coordinator General, COMSTECH Prof. Dr. M. Iqbal Choudhary (H.I.,S.I.,T.I.) visited the exhibition and attended the briefing given at the occasion.



The exhibition was organized by the Ministry of Science and Technology with the objective to showcase Pakistan's success in manufacturing various essential items, such as protective gears, ventilators, respirators, sanitizers and

disinfectants and masks of various types. The coordinator General COMSTECH Prof. Dr. M. Iqbal Choudhary regarded this exhibition an excellent example of converting a calamity into an opportunity for technological development of show-casing Pakistan's technological breakthrough in other OIC countries.

The minister of S&T, Chaudhry Fawad Hussain briefed Prime Minister about various initiatives which MoST has taken to meet the national demands for products required against COVID-19 infection. Minister of defence





COMSTECH

COMSTECH Yearbook 2020

production Ms. Zubaida Jalal also spoke at the occasion. The Prime Minister speaking to audience, appreciated the efforts of scientists and technologists of Pakistan and emphasized the need of science and technology and higher education as primary attributes of national self-reliance.

The exhibit took place in the COMSTECH building at the constitution avenue.

20. International Workshop on Sustainable Cities

COMSTECH with the support of OIC General Secretariat organized the “International Workshop on Sustainable Cities: Issues & Challenges of Rapid Urbanization” at COMSTECH, 28-29, Jan. 2020 on the theme of sustainable urban development, as one of the activities commemorating the 50 years of OIC.



The workshop was organized to strengthen cooperation among OIC states in science and technology and to enhance their capabilities in emerging areas.

The 2-day workshop gathered over 80 scientists, experts, policy makers and young research scholars from several OIC Member States.

Keynote lecture was delivered by Dr. Ishrat Hussain, eminent economist and Advisor to Prime Minister on Institutional Reforms & Austerity. Dr. Tariq Banuri, one of the pioneers of sustainable development, and the then Coordinator General COMSTECH, gave a comprehensive overview of the challenges faced in sustainable urbanization.

COMSTECH Yearbook 2020

Experts gave insights into new technological advancements, challenges faced in urban centers and solutions for tackling these problems. They also explained how research, development and well-defined governance and management models that emphasize municipal level engagement are required to overcome these issues.

21. 1st COMSTECH Showcasing of Artificial Intelligence and IoT Products and Services: AI and IoT for Pakistan

COMSTECH with partner organizations, including Ministry of Science and Technology, Ministry of Information Technology and Telecommunications of Pakistan and Center for Advanced Research in Engineering (CARE) organized “1st COMSTECH Showcasing of Artificial Intelligence and IoT Products and Services: AI and IoT for Pakistan” on 4th and 5th August 2020.



The President of Pakistan, H. E. Dr. Arif Alvi, inaugurated the exhibition on August 4, 2020. He appreciated COMSTECH for taking a pioneering step to initiate a series of exhibitions on modern technologies, and close collaboration with partner institutions in OIC countries to hold such events and mentioned that under the new leadership of Prof. Dr. M. Iqbal Choudhary, COMSTECH has initiated a large number of capacity building activities and programs using its strong networking in 57 OIC member states.

He highlighted the need of AI and its application while stressing for innovation creation and marketing of the products.

The President congratulated COMSTECH and its partner institutions on taking this important initiative. Such showcasing



COMSTECH

COMSTECH Yearbook 2020

not only encourages a culture of innovation, but serves as a platform for interfacing between business and research institutions, he added.

The President urged to produce software developers, empower women, and use software extensively. He stressed the need of motivating and growing the human resources and mentioned that there are tremendous opportunities in OIC member states to get benefit from the latest technologies.

He stressed that the dream of a smart future for our nation cannot be fulfilled without much more vigorous efforts of the business community and greater synergy between the private sector, government, and academic institutions. The president wished a very successful exhibition, and a very bright future for COMSTECH in these exciting ventures.

The minister for Science and Technology of Pakistan mentioned that the Ministry of S&T strongly believes that scientific and technological developments in our country must be translated into products and services. The Ministry continues to support research institutions, assured the minister.



He mentioned that COMSTECH is the most important international organization Pakistan hosts.

He informed that the Ministry of S&T greatly values the central role that COMSTECH is playing not only in the capacity building of OIC countries but also its pivotal role in presenting the Pakistan's scientific and technological capabilities for the promotion of export of high technology products. We are closely working with the COMSTECH for the success of a large number of initiatives, which have been launched under the dynamic leadership of Prof. Dr. M. Iqbal Choudhary, he said.

COMSTECH Yearbook 2020

Coordinator General COMSTECH briefed the President about new COMSTECH initiatives for promotion of science and technology in OIC member states. He mentioned that COMSTECH programmes focus to develop skills and capacity of youth of the OIC region in modern technologies. He also mentioned that COMSTECH is projecting Pakistan's image as scientifically leading country through inter- and intra-Islamic initiatives.



In his welcome address, Mr. M. Aamir, Project Director, CARE, said that the impact of AI alone on the global GDP is expected to be 15.7 trillion USD. Countries around the globe are strategizing to take maximum benefit from these technologies. If Pakistan captures even a miniscule percentage like 1% of this market, it values 157 billion USD

something like 25 trillion Pak Rupees.

Twenty-six exhibitors from industry, academia, research centers and strategic organizations from all over Pakistan participated in this exhibition and showcased their products and services in areas of Health, Internet of Things, Virtual Assistants & Chatbots, Big Data & Data Analytics, Cyber Security, Digital Transformation – 5G, Virtual Augmented Reality, Block Chain, and Business Intelligence. A large number of students and researchers visited this two-day exhibition.

Addressing the closing ceremony Coordinator General COMSTECH, Prof. Dr. M. Iqbal Choudhary congratulated the partner organizations for holding this event successfully. He assured that COMSTECH would



COMSTech

COMSTech Yearbook 2020

organize such events in advanced cutting-edge technologies throughout OIC member states.

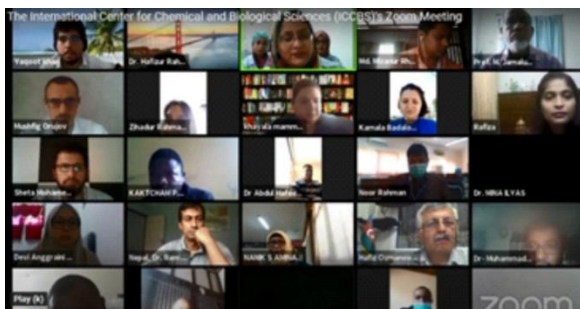


22. Certificate Course on Diagnosis of COVID-19

3-day Online Certificate Course on Diagnosis of COVID-19: Sample Collection, RNA Extraction, PCR, and Data Interpretation concluded successfully on August 20.

More than three hundred participants joined the inaugural session from 30 countries. A very large number of researchers, four hundred, got registered to this course.

Coordinator General, COMSTech Prof. Dr. M. Iqbal Choudhary thanked the organizing team and Institute of Virology for holding this successful capacity building event which was attended by more than 300 people from different countries and termed this event a good example of international cooperation.



He appreciated the topic selection and the module design of the training course by the organizing team and stressed that the learning technical details of

COMSTECH Yearbook 2020

PCR, RNA, DNA is most important not only for COVID-19 but also for other health related tests, because there exists so many pitfalls that may take to absolutely wrong results.

He urged the participants to always keep learning because this is the only way to deal with the future challenges and help save the humanity.

This 3-day course was programmed with a one-hour long lecture by an expert followed by practical session each day. Videos of this course are available on comstech-oic youtube channel.

COMSTECH in collaboration with the International Center for Chemical and Biological Sciences (ICCBS) Karachi organized this course.

23. 4-Day Workshop on Environment Modeling Based Requirements Engineering

4-Day Workshop on Environment Modeling Based Requirements Engineering conducted by Prof. Zhi Jin of Peking University and Prof. Xiohang Chen and organized by COMSTECH in collaboration with the IEEE Education Activities Karachi Section.

It was attended by 25 researchers physically and 60 virtually. In his concluding remarks the Vice-Chancellor University of Karachi, Prof. Dr. Khalid M. Iraqi, congratulated the participants of the workshop and appreciated the efforts of the organizers and the collaboration between COMSTECH, IEEE Karachi Section and University of Karachi and hoped for future institutional collaborative activities.

Coordinator General, COMSTECH, Prof. Dr. M. Iqbal Choudhary thanked the participants, organizers and the resource persons for their tireless effort to conduct this 4-day long workshop. He



commended this cooperative effort and hoped that such collaborative joint activities with Chinese institutions will be carried out in the future.

24. Online Certificate Course on Serological Testing of SARSCOV2: Sample Collection, Testing & Result Interpretation

COMSTECH organized 2nd Online Certificate Course on SARSCOV2 in collaboration with National University of Sciences and Technology (NUST), Pakistan on 24TH September 2020. This course had participation from Pakistan, Turkey, Cameroon, Nigeria, Iran, Indonesia, Sudan, Azerbaijan, Senegal and other countries. This course was conceived to benefit scientists and research scholars from different fields of biological sciences including Molecular Biology, Biochemistry, Genetics, Immunology, and Biotechnology.

The course was delivered by Dr. Ali Zohaib and Dr. Aneela Javed, Faculty members of NUST, Atta-Ur-Rehman school of Applied Biosciences. Contents of the course were related to basis and principles of Serological testing, Laboratory procedures for COVID-19 sample collection, storage and transportation. Additionally, audience was briefed about current state of the art diagnostics used for SARS-COVID 19.

Prof. Dr. M. Iqbal Choudhary, Coordinator General COMSTECH, welcomed participants and explained the significance of this important course. He delved into modalities COMSTECH has adopted to enhance capacity of member OIC states for COVID-19 testing and creating mass awareness towards this pandemic.

In concluding session, facilitators and moderators briefed participants about COMSTECH future initiatives and current research work on COVID-19 in Pakistan, Particularly NUST.

COMSTech Yearbook 2020

25. Course on Symmetry Operations for Crystallographers

International Center for Chemical and Biological Sciences in Collaboration with COMSTech organized an online course on “symmetry operations for crystallographers” which was delivered by Prof. Dr. Richard C. Garratt, Department of Physics and Interdisciplinary Science, Institute of Physics of São Carlos, University of São Paulo, Brazil.



This course spans over 15 weeks from Oct. 13, 2020 – Feb. 02, 2021, in which two sessions each week on Tuesday and Friday are being conducted. The students from OIC member states are attending this course online. This two-credit hour free course is designed for postgraduate and Ph.D. students working in any discipline of Chemistry, Biology, and Physics.

At the end of this course the participants will be able to understand and apply current knowledge on the basics of symmetry operation as applied to chemical and biological structural studies on the basis of X-ray diffraction analysis.

Crystals are periodic arrays of atoms, ions or molecules. They can be described by the symmetry of "infinite" objects. They show translational symmetry along with the rotations, reflections and inversions found in finite objects. In three dimensions, there are only 230 possible symmetric arrangements which are compatible with translational symmetry. These are the crystallographic space groups, and they are derived from 32 corresponding point groups. It is important to determine the space group of a crystal



as it has implications at all stages of structure determination, from data collection to structure refinement, and sometimes even during the interpretation of the resulting structures. During this lecture the basics of the symmetry of three-dimensional objects relevant to crystallographic analyses will be presented in the simplest way possible.

Prof. Garratte is currently a full professor at the University of São Paulo working in the field of structural biology using protein crystallography and molecular modeling techniques. His current practice areas include septin, superoxide dismutases, the purine salvage pathway in parasites, nuclear receptors, protein-based drug and vaccine planning, protein engineering and the development of teaching tools for teaching structural biology. He is a member of the Academic of Sciences of the State of São Paulo and the Brazilian Academy of Sciences.

26. Online workshop on innovation in entrepreneurship education

COMSTech Online Workshop on “Innovation in Entrepreneurship Education - Using Experiential Learning to Connect Theory and Practice” held on September 30, 2020.

M. Nauman Farooqi, Ph.D. Dean of Business & Social Sciences, Professor of Finance & Entrepreneurship Ron Joyce Center for Business Studies Mount Allison University Sackville, NB, Canada conducted this workshop.

The objective of this session was to share the instructor and student learning experience of the use of experiential learning pedagogy in an entrepreneurship course using Practical Organization Behavior Education (PROBE) model. The PROBE model, which was originally developed to teach organizational behavior, has been modified and extended to effectively teach

COMSTech Yearbook 2020

various business courses. However, the use of PROBE in an entrepreneurship course is innovative and as such needs to be shared with the learning community.

This was an interactive session. Diverse audience from university/college faculty, curriculum developers, researchers, policy makers and government attended this workshop.

27. Virtual seminar on grow, nourish and sustain together

The experts stressed the need of taking immediate actions to protect food system to produce enough food in quantity and quality. The COVID pandemic has already posed a serious threat to our food system; we need to develop resilient and holistic food system to fight hunger, the panelists urged, while addressing the COMSTech virtual seminar on World Food Day on the theme of “Grow, nourish and sustain together” organized in collaboration with UPSIGN and Pakistan Academy of Sciences.

They warned that the food system is facing tremendous pressure from climate change causing the depleting natural resources, soil degradation, water shortage and increasing threat from invasive species of pests and diseases. It was noted that the new varieties have low update of trace elements and essential minerals that needs to be addressed.

Prof Ratan Lal, The World Food Prize Winner 2020, was the chief guest speaker. A panel of distinguished scholars and policy makers who participated in this seminar include Dr Tina Barsby OBE, Director and Chief Executive Officer, National Institute of Agricultural Botany (NIAB), UK, Dr Shahid Mansoor, National Institute for Biotechnology and Genetic Engineering (NIBGE), Prof Iqra Ahmed Khan, former VC of University of Agriculture, Faisalabad.



The Hon. Ms. Shandana Gulzar Khan, Chairperson of the Commonwealth Women Parliamentarians (CWP) network and chair of Agri products committee in National Assembly of Pakistan informed that the government of Pakistan is keen to develop a long-term strategy to protect its natural resources, especially soil and water for the coming generations in her closing remarks.

Prof. Lal stressed the need of teaching our young generation to protect our soil's health, which is living and improve organic contents, through restoration of soil health, we can improve the human health. Resilient systems are those that can bounce back, we need to encourage urban agriculture. Good food is a good medicine, improving nutritional value. He quoted verses from the Holy Quran meaning "Eat lawful and what is good on earth".

Dr Tina Barsby said, "If the world is to grow enough food for the projected global population in 2050, agricultural productivity will have to rise by at least 60%, and may need to grow more than double. Maize, Rice, Wheat and Soybean are only increasing by about 0.9% to 1.6% a year. We need to increase it to 2.4% per year to double yield by 2050".

Dr. Shahid Mansoor emphasized the need of adopting the speed breeding technologies, to reduce generation and breeding time 2-3 years, adopting genomics/genomic selection and use of genetic markers to select desirable traits both for crops and livestock.

Prof Iqrar Khan alluded the need of soil stewardship schemes especially inclusion of legumes in the cropping system. Dr. Khalid Mahmood thanked the speakers. More than 100 participants across the globe attended this event.

28. COMSTECH Int'l workshop and exhibition on AI in healthcare

Realizing the importance of Artificial Intelligence (AI) in the healthcare systems, COMSTECH organized a two-day workshop and exhibition on AI in healthcare in collaboration with Sir Syed CASE Institute of Technology on November 24-25, 2020. The event was organized under the kind patronage of Prof. Dr. Atta-ur-Rahman (FRS., N.I., H.I., S.I., T.I.), Chairman Prime Minister Task Force on IT.

Over 100 people participated, 10 companies and 2 labs exhibited their AI products for healthcare, 9 experts gave poster presentations and 17 speakers from Pakistan, UK and Austria gave lectures in this 2-day event.

The objective of this event was to bring together the researchers, industrialists, and practitioners interested in the specification, design, and development of AI to cultivate smart healthcare systems.

Dr. M. Iqbal Choudhary, Coordinator General, COMSTECH said in his inaugural speech that we will have to live with new normal now. He said that the paradigm of development has changed and now we have to invest in human resources to accelerate the development of any country. He urged that now it's time to fund innovation, and centers of excellence in artificial intelligence. Dr. Iqbal highlighted the role of COMSTECH in science diplomacy and informed the audience about the recent launch of COMSTECH Consortium of Excellence, a joint initiative of Ministry of Foreign Affairs, Pakistan and COMSTECH.

Dr. Shoaid A. Khan, Chancellor, Sir Syed CASE Institute of Technology, talked about the current status and use of AI. He highlighted the importance of AI and showed the use and



COMSTECH

COMSTECH Yearbook 2020

benefits of this technology in general and in the area of healthcare. He stressed the need to have a policy and strategy to nurture, adopt, develop, and implement AI in Pakistan to ultimately reap the benefits of this technology. Dr. Shoab said that it is most important to convince people for digitalization because there is a resistance to it and without digitalization the application of AI is impossible. He pointed out that there is a big gap between academic education, research work and the practical market. He encouraged the participants to learn and apply AI and assured that it has tremendous future.

He mentioned that technology billionaire individuals are more rich than many countries in the world due to the application of modern technologies. He urged that Pakistan must have strategy to trigger the potential of artificial intelligence.

29. COMSTECH Al-Farabi Forum

President of Pakistan, Dr. Arif Alvi inaugurated international conference on Al-Farabi at COMSTECH in the pleasant morning of December 21st. The two-day conference was organized jointly by COMSTECH and the government of Kazakhstan to celebrate the 1150th anniversary of Abu Nasr Al-Farabi, the great Muslim philosopher and scientist who hailed from the lands which are now the part of Kazakhstan.



Dr. Arif Alvi, pointed out that the pace of scientific developments in the present era is so rapid that will widen the gap further between the developed and developing Muslim countries, if immediate and focussed actions are not taken. He identified the spirit of enquiry and boldness as characteristic of the Muslim

COMSTECH Yearbook 2020

scientists and philosophers in the glorious days of Muslim science and philosophy.



He urged the OIC member states to join hands with this prestigious institution and work together for the renaissance of the Ummah. He said that COMSTCH is only institution of OIC hosted by Pakistan and lauded COMSTECH efforts for promotion of scientific cooperation and the uplift of the OIC countries.



The two-day Conference included lectures, both in person and online, by leading international experts on Islamic thought, history and philosophy.

Prof. Asad Q. Ahmed of Berkeley, Prof. Peter Adamson from Munich, Prof. Ann Druart from Washington, Prof. Iftikhar Malik



COMSTech

COMSTech Yearbook 2020

from Bath UK, Prof. Galimkir Mutanov of Al- Farabi University of Kazakhstan, and Dr. Darkhan Kydyrali of the International Turkic Academy were the key speakers of the conference.

Assistant Secretary General of OIC, Ambassador Askar Mussinov, and the Kazakhstan Ambassador to Saudi Arabia Mr. Berik Aryn were the distinguished guests.

The speakers talked on different aspects of the life, and contributions of Al-Farabi as the pioneer who served as a bridge between the ancient Greek thought, philosophy of Aristotle and the Islamic civilization.

For his work Al-Farabi came to be known as the Second Master, the ultimate authority in philosophy after Aristotle.

The conference had six sessions, followed by a closing session with a panel discussion on “Science and the Islamic world - A philosophical assessment”.

The Coordinator General COMSTech, Prof. Dr. M. Iqbal Choudhary announced in his address that COMSTech and the Turkic Academy would organize similar forums on renowned Pakistani philosopher Sir Allama Dr. Muhammad Iqbal, in Turkmenistan, and on the eminent astronomer scientist Ulugh Beg in Uzbekistan.

In his address, the Assistant Secretary General of OIC ensured the full support for the development of science and technology in OIC member states. Dr. Darkhan Kydyrali, the President of International Turkic Academy appreciated COMSTech for organizing the forum on such a renowned scholar and resolved to take this tradition further and hold such forums on other renowned muslim scholars.

COMSTECH Yearbook 2020



Dr. Galimkair Mutanov, Rector, Al-Farabi Kazakh National University delivered special lecture in the concluding session of the forum. He said that the most important task for the humanity is to recognize the creator who made it conscious. Wisdom and science are reflected in the Islam, he mentioned. He suggested that we should pay special attention to the Golden age of Muslim thought and define the issues rises in the Mulsim philosophy in relation to religion and science.



After his lecture one-hour long panel discussion session was held. Dr. Ehsan Masood, from UK, Dr. Nomanul Haq, Dr. Ghazna Khalid and Dr. M. Iqbal Choudhary were the experts of the discussion session to answer and discuss the questions of the scholars from the audience and the session was moderated by Dr. Khurshid Hasanain.

This forum was attended over 120 scholars from Pakistan, United Kingdom, Kazakhstan, Cameroon, Nepal, Somalia and Sudan in-person and virtually, and 15 national and international experts gave talks.



**30. Address by H.E. Dr. Arif Alvi, President of Pakistan at the
Opening Session of the Global Al-Farabi Forum**

Bismillah Ar-Rahman Ar-Raheem

Excellencies, Distinguished Guests, Ladies and Gentlemen,

Assalam aleikum,

It is always a pleasure to speak to an international gathering of people who devote themselves to science, improvement of the lot of the Muslim world, as well as those who indulge in philosophy today. And it is indeed a pleasure that we are recognizing one of the great Muslim philosophers, Abu Nasir Muhammad Al farabi on the auspicious occasion of his 1150th birth anniversary.

I personally believe that when man starts thinking about his surroundings, depending on what he knows, there is on the one hand the storehouse of knowledge which is brought forward from previous generations to his own mind. And then of course he employs his own senses as he looks at the world around and addresses the questions that emanate. And that is why even after Socrates or Plato, the earliest of philosophers we know from ancient Greece, even today the questions about our existence, about the earth and about the universe, remain the same.

Despite the fact that we know a lot, and we are sometimes very confident, but as time passes, and as we come to know more and more, we realize that we know far less than what we can imagine to be the complete knowledge of the world.

So philosophies have developed as a mixture of scientific developments, the knowledge obtained from the senses, and the

COMSTech Yearbook 2020

awareness, as I earlier mentioned, of what is happening all around us, and finally of the logic that combines these different inputs. So one of the most noble sciences, which is considered as pure, is mathematics. And Philosophers for a long time have dabbled in Mathematics, combined with logic and the information obtained from physics.

Philosophers in the earlier era were polymaths; men who understood all the sciences available then. Today, however, with the proliferation of knowledge, this is of course impossible. All of you sitting here are probably focusing on different eras, different impacts on small parts of the big science; whether it is physics, or mathematics or medicine. All of us focus probably on a very small part of what the world knows today. But in those areas, the philosopher was a mathematician, was a person who talked about logic and astronomy; e a person who talked about the universe, and a person who talk or write about, whatever is happening here, down on the earth.

So my own first exposure to philosophy was through the dialogues of Plato, when I was 16 or so. Around that age my mother asked me to read the Dialogues of Plato, and I remember reading the Republic. And I remember reading the Apology and some Sophist etc. It was a very interesting experience because nobody had exposed me to that kind of wisdom. I knew that two plus two is four, and four plus four is eight. But at the same time, in our daily discussions, the window of logic was opened for me through my first exposure with Plato and his writings. But from then on I kept reading philosophers in my personal search to be able to find the truth. My own search was to be able to find whether God exists. And I read whatever knowledge and arguments I could lay my hands on. I read a lot of philosophy



including, in the end, Bertrand Russell. And even today there is a lot of reading which is available on the subject. And this is despite the fact that Plato wrote on these subjects in around 350 BC.

And even today there is a lot of those ancient material that is available. And considering the fact that Plato wrote in around 350 BC, it was the Muslim era which brought all that knowledge based on ancient Greek philosophy of Aristotle, Socrates, Plato etc to the modern world. And that knowledge is still very important. Al-Farabi was one of the most prominent of those people who brought forward the knowledge of Aristotle, in particular, and definitely and of many others. While Al-Farabi probably belongs to central Asia but there is no consensus about his origins. Farabi means an area which is prosperous in agriculture, related probably to springs of water, and probably near Saer Darya or Amu. He probably lived around there and he came from that region, and then he translated a lot of Greek philosophy. And he too was a philosopher and jurist. We now that he was known as the “Muallim eThaani” or the Second Teacher, second that is only to Aristotle.

Aristotle laid down that the earth was flat and that the earth is the center of the universe. And it took Galileo and other scientists of the past few centuries to assert that the earth is not flat but is spherical, and that the earth is not the center of the universe. So, Al Farabi is the “Mualim e Thaani” also and he wrote on political philosophy and I’ll point out to a very interesting aspects of his life and of his writings. He wrote on meta-physics, he wrote on physics, he wrote on cosmology and he also wrote on music and the relation of music to the human soul, something akin to Sufism, which also relates to the same

COMSTech Yearbook 2020

philosophy and thinking. His predecessors were of course AL Kindi and Al-Razi, but he was acknowledged by Ibne Sina and Ibn-e-Rushd, and by Maimonides who was a Jewish philosopher, who highly praises Al-Frabi's contributions. AL Farabi's propositions of logic e.g. were future contingent propositions which were initially argued by Aristotle. The interesting thing about Plato's dialogues were, like today's talk shows, there were characters, and the characters were arguing with each other. And there were there were discussions happening on the belief of each character. And those that is why all Plato's writing had characters, except for the Apology, which was the defense of Socrates when he was charged with different crimes. Hence it doesn't have any characters. But all of other Plato's dialogues, had character characters, asking and arguing on different pretexts. So one example, which appealed to me, I don't exactly remember was a mathematical example of Achilles' race with the tortoise. That was Plato in his Dialogues, arguing the fact, while not realizing or not putting in the reality or dimension of time. So if there are the three dimensions, length, width and height and there is no time, then the argument of the race between Achilles and the tortoise could not come to a conclusion. Achilles was a Greek runner who could never win the battle with the tortoise because the poor tortoise is given a ten feet advantage in the race. By the time Achilles reaches 10 feet, the tortoise would have gone $\frac{1}{10}$ th of a foot further ahead. And when Achilles would reach the $\frac{1}{10}$ th feet, the tortoise would have gone $\frac{1}{100}$ th of the feet further. So it was a mathematical argument that unless you bring in the dimension of time it wouldn't get settled as to who won the race. Similarly, Aristotle had a future contingent proposition in which there is e.g. a statement like the sea battle will happen tomorrow. Now



that statement will always be true because when tomorrow comes, a sea battle will happen tomorrow, and the day after tomorrow sea battle would happen tomorrow. And Aristotle argued with that kind of argument and Al-Farabi also give some further thought on that. But the most impressive part was the breadth of those thinkers thinking. The breadth of Al-Farabi's thinking when he wrote on music, and the fact that music has an effect on the soul was impressive by itself. And I still remember, my father according to the Islamic teachings never liked music, and when we started practicing together, I put a background music in my clinic which he disliked. But when he got ill and he went to the United States and he had to be in the hospital where music was played for the patients, he came back and said "Son! The music was very soothing". So something when you take upon judgments you can always learn what happens in the future. So, something when you take over take upon judgments, you can always learn what happens in the future. Al-Farabi wrote his Book of Letters, which was a semantic discussion, and semantics is the most important part of all our thinking. We may realize this or not, because we are limited by the number of words we can use and we are limited in the usage of those words by our feelings and we are limited by millions of inputs in our life. And when we try to communicate we are again limited by our emotions, by our limitations of word knowledge. And the other person who distills that knowledge, he does it under his own mechanism and under his own understanding of life. I am very impressed by how Al Farabi describes that there is a higher non-mortal world of cosmology of the universe, and that there is a lower world where we are with our bodies which are limited, as we decay. But there is a link between both these worlds and that is the world of rational intelligence. When we try and

COMSTECH Yearbook 2020

understand what we are with that which is there forever, I think that is a very important contribution of Al-Farabi. He was a very prolific writer, he wrote a number of treatises e.g. on Happiness. Indeed, he is probably one of the most important characters who brought the knowledge of the ancient Greek era, an era much older than his own, and he brought it to the medieval age. That which is called as the Dark Ages by Europe, but were indeed the ages of the enlightenment of the Muslim world. Muslim world transmitted very honestly the inheritance of the Greeks. In fact, even in Pakistan and India, what is known as indigenous medicine, was labelled as Yunani or Greek medicine. It was a Greek inheritance, and we gave credit to it.

So, let me tell you what impresses you the most in Al-Farabi. His book “Al-Madinah-tul-Fazeelah” and that’s a very important book in the sense that it talks about the state. Just as in Republic’s dialogues, Plato talks about the state, Farabi talks about the state also and he talks about the city “Al-Madinah” as a city and then he asked, “A Good City! What is a good city like?”. And then he talks about Riyasat-e-Madinah which is the contemporary dialogue of the present government in Pakistan also. Mr. Imran Khan talks about the rights of Riyasat-e-Madinah, the functioning of Riyasat-e-Madinah and the principles of Riyasat-e-Madinah, the social understanding of the state with respect to the people of any city in any state. So Farabi wrote about Al-Madinah-tul-Fazeelah. And every philosopher starting from Plato even Socrates, first they talked about what was there, how much they understood it, and then they talked about organization and about a state and the functions of the leaders of the state. And there were evil writers also like, Machiavelli wrote The Prince, and some of you would have read it. If you



read it, it essentially says how in a cunning manner you can play with the emotions of the people and exploit them.

So Riyasat-e-Madinah today is a concept in the Muslim world that the best possible state was the state of Madinah, when Hazoor-e-Akram (S.A.W.W) laid down the principles in communication with Allah Subanu-wataalaa. The Prophet laid down the principles which are eternal as far as relationship between human beings are concerned. The ethics are eternal, the principles are eternal, the circumstance will change, people will move instead of camels in cars, instead of Miswaak people will use toothbrush, but the principles will remain the same. Because humanity and its emotions will never change. Humanity lives its emotions, which are love, hate and phobias, as I mentioned also somewhere few days ago.

So Ladies and gentlemen, the most important thing Farabi did and the most important thing for the Ummah today and for the OIC and for you gentlemen today is the fact that we believe in our own countries, and that we believe as the Muslim Ummah that we have been left behind by the current scientific knowledge of the world and that knowledge is developing very fast. If you thought that knowledge is going at a pace where you can catch up with it, then let me give you some news. This knowledge is developing much faster than you have ever thought. The change which is happening, it is a change like an industrial revolution. Artificial Intelligence (AI) and thinking which is around the corner, is moving very fast. I was reading a book Super Intelligence by Nick Boston and the fact that we do not know what will happen in next ten years means that we will be left further behind. There is an acceleration which is around us. So it is very alarming for me to present this situation before

COMSTech Yearbook 2020

you. And this forum is one of the forums which is talking about the most important situation.

As about 150 years ago when Sir Syed Ahmed Khan in India and Pakistan in this region, where he asserted that Muslims have to learn. It was a process about which we thought will take a couple of generations and if you start learning, you will catch up with the advanced world. That, unfortunately, is not true today. You don't have the time of a couple of generations anymore. By the time we will learn as to what has happened so far, science, technology, artificial intelligence and the internet would have gone far beyond. So this is a warning. And in fact COMSTech is a great institution which has to carry this burden and try and motivate the Islamic world that unless you have knowledge, you will not be able to improve your lot.

It's not the question of Defense, it's not a question of armaments. If you purchase the armaments from somebody, there is still time and you should purchase it. Sometimes we may have pride that we have purchased these armaments and we are strong. But strength comes from the internal; from thinking, from building character and building principles. It comes from ethics; which Islam has given to you as a permanence, you have that strength. But that strength has to be translated into scientific current knowledge to have an advantage.

Islam never thinks of exploitation; Islam thinks of serving your own lot. Well, Islam thinks of Insaaf, Islam thinks of establishing a state where the rights of people are provided. That is the biggest message of Islam. The message that Allah is one and the message that Prophet Mohammad is the last prophet. Allah Subanu-wataalaa has laid down the principles on the basis of which then you learn. So the source is described to you to



COMSTech

COMSTech Yearbook 2020

believe that whatever the information is coming to you is the true information.

So you don't have to follow the scientific principles of Islam. The principles of Islam are more ethical and moral. And today if you look around the World, if you look around the United Nations and the international forums, there is a clear lack of morality. Talking about the morality in international institutions, I was reading Sir Agha Khan (the third) who was the President of the League of Nations in 1938 or 1939. In his memoirs he wrote that institutions in the world lack morality. And even today the weightage of money, the weightage of trade, the weightage of armaments, the weightage of brute force is present in these institutions.

And that's where is the Republic or Al-Madinah-tul-Fazeelah or the fact that the constitution of Islam or The Quran by itself (the biggest one) lays down the principles which are lacking today in the world. So if the world is not looking for morality, we Muslims are looking for morality. We believe in morality but lo and behold, when we have problems like Kashmir and Palestine, we realize that world doesn't care about us. Why? Because either we are talking about Pindram Sultan Bood, that once we were strong. Yes, our Emaan is strong, there is nothing which can defeat us. But Emaan needs a combination of scientific knowledge to be able to improve your lot. We are not defeated nations but our people are in misery. Look at India, Muslims are in misery. Look at Palestine, look at Kashmir! They are in misery. Look at Rohingya! They are in misery. Even we are ourselves are in poverty, and we are not able to take care of our own. If you have "Pukhta Emaan" God will not change you because God has prescribed principles. Allah Subanu-wataalaa has his own

COMSTECH Yearbook 2020

principles of running this world. He gives leadership, he gives chance to people who can change.

So it is important that we go and pick up the principles of Al-Farabi, the guidance of Al-Farabi and the guidance is simple. His knowledge may probably be outdated but his principles, his arguments are probably very contemporary. And based upon those principles and arguments, Ladies and Gentlemen, it is up to us.

The future looks towards us, the Muslim Ummah looks towards us. The Muslim Ummah believes that there can be a change and we have talked about change for a long time. Every leader in the Muslim world has been talking about change. But to be able to do it, we have to work harder, we have to ensure the fact that our people get educated and we have to ensure the fact that our people are healthy. These two are the combinations to lift us out of poverty. And as we get educated and with higher education we have a chance. So Ladies and Gentlemen, let not that chance go away.

Thank you very much.

COMSTECH Webinars

31. Webinar on Status of STI in OIC Region

Former Prime Minister of Jordan Prof. Dr. Adnan Badran has said that without science no progress can be made in the Muslim world, as science is the backbone of development.

He was delivering online lecture on 'Current Status of Science, Technology and Innovation in Muslim World' in the international online seminar organised by COMSTECH (the Ministerial



COMSTECH

COMSTECH Yearbook 2020

Standing Committee on Scientific and Technological Cooperation of the Organization of Islamic Cooperation - OIC) on Monday.

The international online seminar on “Current Status of Science, Technology and Innovation in OIC Member States” was moderated by Prof. Dr. Atta ur Rahman, Chairman of the Prime Ministers National Task Force on Science and Technology. COMSTECH Coordinator General Prof. Dr. Iqbal Choudhary also joined the online seminar. This seminar was also held to talk about COVID-19 in connection with Muslim countries.



The Lecture was opened for scientists, researchers, academicians and the general public of OIC member states to join through ZOOM.

Prof. Badran suggested the leaders of Muslim world that investing in research and higher education must be on priority. Muslim countries need to have knowledge based economy based on human capital, creation of new knowledge and innovation.

Talking about the significance of real scholars, he said that the presence of good scientists in any country showed that the future of the country was in good hands.

He suggested that investing in research and higher education must be priority, we have to look at knowledge based economy, which is based on human capital, creation of new knowledge and innovation.

The spread of COVID-19 pandemic has proved that a person or a nation cannot live alone. He also talked about the helplessness of developed nations in the COVID-19 pandemic.

COMSTECH Yearbook 2020

Comparing GDP of the rich countries with the Islamic countries, the former Jordanian PM said that the GDP of developed countries had been produced by investing in the human capital, research and innovation and knowledge economy whereas the GDP of OIC member states is coming solely from natural resources. He emphasized that OIC member states must convert their source of GDP from natural resources to the knowledge economy.

During the discussions in seminar session Dr. Atta ur Rahman, Dr. Badran and Prof. Iqbal Choudhary agreed that the development of Singapore and China was due to their knowledge economy.

32. Webinar on Science Advice to the Governments

The nature of science is changing, the relationship of science and society is changing, the nature of policy making is evolving, there is a linkage between society and policy making. The importance of social sciences in science policy is crucial and inclusion of social scientists in the dynamic of science advice is key, said Prof. Dr. Tan Sri Zakri Abdul Hamid while addressing COMSTECH webinar participants on the topic of “Science advice to governments” here at COMSTECH Secretariat on September 23, 2020. Prof. Zakri has shown the way to the development to Malaysia said Prof. Dr. Atta-ur-Rahman in his introductory remarks.

Prof. Zakri talked about principles and practices of science advice to the governments. He said to be successful in policy making we have to engage different tiers not only the politicians, and policy makers but also the public, media, agencies, recipients and international organizations. The reliance is now on more evidence-based policy making, he said.



COMSTech

COMSTech Yearbook 2020

Every challenge governments face has a scientific dimension, which may or may not be recognized. Science alone does not make policy many values and political considerations do. The science, public opinion, political ideology, electoral contract, fiscal objectives and obligations, and international obligations are the inputs to the policy making, he mentioned.



To make the science policy to be really owned by the public, scientists must link up with the political leaders, he suggested by mentioning many examples from his experience.

During the discussion session participants came up with two conclusions. First, we should make small groups of like-minded countries and start work in those countries and after getting success we should spread it to other countries. Second, COMSTech should establish a “COMSTech Network on Science Advisory”.

Dr. Zakri worked as research scientist & academic, senior university administrator, diplomat, negotiated UN treaties, member of Ban Ki-Moon's scientific advisory board. He is founding chair of intergovernmental platform on biodiversity and ecosystem services, vice-chair board of trustees of the UN technology bank for least developed countries, member of IsDB President's scientific advisory council and science adviser to the prime minister of Malaysia. Currently he is chairman of Atri Advisory, Chairman of BCSD of Malaysia and Pro-chancellor of Multimedia University in Malaysia.

COMSTECH Yearbook 2020

This webinar was attended by a large audience from OIC member states. Prof. Dr. M. Iqbal Choudhary Coordinator General COMSTECH thanked the participants and Prof. Dr. Zakri Abdul Hamid and Prof. Dr. Atta-ur-Rahman for their precious time and recommendations.

33. Webinar on Response to COVID-19

Most Muslim majority countries have avoided the large-scale catastrophic outbreak. Pakistan is a remarkable example of data driven, coordinated and focused response probably the best in low and middle income countries, said Dr. Zulfiqar Bhutta while addressing COMSTECH online webinar on response to COVID-19.



COVID-19 is an existential threat to the world. Twenty and half million cases and close to 750 thousand deaths have been reported worldwide and this figure will be one million before the end of this year, he predicted. This pandemic has affected every geography even places where we have very little data from. In Pakistan public sector spent over 20 million dollars on testing alone between March and now, he mentioned.

Dr. Bhutta pointed out that Muslim community have unique attributes and some protective factors as well. Geographic and geo-political clustering does protect and sometimes expose them but there are common socio-cultural practices like Ablution for prayers do have standard sanitation and hygiene. Dietary restrictions have some level of dietary protection against consumption of agents which might be risk for infectious diseases, he mentioned.

He also highlighted the risk factors like communal practices and behaviors, religious celebrations and gatherings that were major



factors in the initial spread of the virus because protective strategies had not been implemented. In the Islamic world, areas of conflict and insecurity, vaccine hesitancy and gender norms and practices are major risks of health related concerns.

Authoritarian regimes responded better than the democratic societies. Many countries in Europe, not only UK and US have really not done as well, as one would image as others have done in the world, he noted.

Pakistan is much better than others in the region. Pakistan, Afghanistan and Bangladesh seem to have flatten the curve in terms of cases and case fatalities. We are indeed beginning to see reduction in local transmission. Overall case positivity rate is around 4%.

Severity of illness related to COVID-19 has gone down in Pakistan and if it remains well in the next two to three weeks while we will pass through the exposures during Eid ul Adha and Muharram then we might be able to say that we have been able to get over this effectively, he hoped.

He mentioned that to predict the future of the pandemic we have to rely on modeling, modeling is extremely important to predict where this pandemic is going. We have done it for Pakistan we are doing it for South Asia, and we can do it for the OIC member states if there is interest across the region and COMSTech could play a role in this, he suggested.

Much is still unknown about the disease. It is likely to persist well into 2021 and possibly 2022. We have to live with this pandemic for many months and the prediction is that the things may stabilize by 2021 and may be towards the end of 2021, once people begin to learn how to live with this virus and vaccine availability, he concluded.



COMSTech

COMSTech Yearbook 2020

He appreciated COMSTech being an apex body, for trying to put scientific effort into helping people to overcome this global challenge.

Prof. Dr. Zulfiqar A Bhutta, FRS, is founding Director, Institute for Global Health & Development, the Aga Khan University, South-Central Asia, East Africa & United Kingdom and Chair in Global Child Health & Policy, Centre for Global Child Health, The Hospital for Sick Children & University of Toronto, Toronto, Canada. Video is available on comstech-oic youtube channel.

34. Webinar on COVID-19 Epidemiology Evidence Based Policy and Prospects for Vaccine

There is no huge delay in the vaccine development for COVID-19, said by leading American expert Prof. Dr. Saad B. Omer while delivering his online seminar arranged by COMSTech. He described the vaccine development process in detail by discussing all technical aspects involved in the process. He informed that the fast-track vaccine development is currently



underway. Human trials have been started and there is no huge delay in vaccine development for COVID-19. He provided a detailed account of various vaccines which are in the process of development against COVID-19, and explained how vaccines work against the viral pathogens.

At the outset of his lecture, Prof. Dr. Saad B. Omer said that it is not to stigmatized any disease any country or nation and there is a need of empowering the scientists to lead in making critical decisions, avoid fake news and false assurances. Despite lockdown, social distancing is not possible or practical at home,



many of the infections are of familial origin - originate between the family.

To cope with the pandemic he suggested to test, trace contact, quarantine asymptomatic carriers, reduce household transmission and practice social distancing. He informed that the outbreak in South Asia is slower than the Europe, and the doubling time of cases is 7 days.

By answering a question seeking his opinion on complete lockdown or smart lockdown, he stressed that nations should be pre-emptive, don't wait for cases to rise. Countries that reacted quickly, proactively succeeded in slowing down the spread, whereas those countries which were not proactive saw exponential rise in cases. He suggested go early, test, trace contacts and ease lockdown slowly, smartly and sector wise.

Is it wise to ease lockdown while there is no therapy, no vaccine? He replied that it depends on the rate of cases, if cases are rising rapidly then nations have appropriate strategy to cope with the situation. He suggested to ease lockdown carefully by implementing all suggested safety measures.

Participants from various cities of Pakistan, and other OIC countries such as Nigeria, Azerbaijan, Bangladesh and Egypt joined the session.

To watch complete lecture please browse:
<http://www.comstech.org/seminar-covid-19.aspx> Ć

35. Webinar on Network Evolution

We need electricity and internet to reshape our country. Pakistan must establish a cybercity to generate, use, disseminate and share knowledge of networking, internet, internet of things

COMSTECH Yearbook 2020

and fourth industrial revolution, said Dr. Kashif Nisar while addressing an online seminar organized by COMSTECH, LEJ and University of Karachi.



Dr. Nisar talked about the fourth industrial revolution and IoT, smart home technologies, IoT and banking, IR 4.0 in agriculture and tourism, future internet and information-centric networking (ICN).

The fourth industrial revolution is coming with the application of internet of things to industry combined with other technologies like big data, machine learning and 3D printing, he informed by mentioning that the 4th industrial revolution leading the intelligent information society and the digital transformation.

Wearable devices, building and home automation, smart cities, smart manufacturing, smart health care and smart automation are the topics of research and application of tomorrow, he mentioned by quoting examples of application of such technologies from advanced countries.

He gave a snapshot of the future world by mentioning that 10% people will be wearing clothes and reading glasses connected to internet, 1 trillion sensors will be connected to the internet, 1st robotic pharmacist in US, 1st 3D printed car production, 10% driverless cars on US roads and 90% population will be with smart phones by 2025.

Dr. Nisar pointed out that key success factors in the 4th industrial revolution era are technology, industry and society



COMSTECH

COMSTECH Yearbook 2020

that must be fully equipped with the modern information technologies.

Internet has changed the world and made profound changes in human history. If we compare the world of pre and post internet, this is the internet that has changed our way of living altogether. There is not any other technology that has been taken and deployed so rapidly then the Internet. International Center for Chemical and Biological Sciences, University of Karachi is the first one which started using Internet and Email in 1980s, mentioned Dr. M. Iqbal Choudhary, Coordinator General, COMSTECH in his introductory remarks.

Dr. Kashif Nisar got post doctorate from Auckland University of Technology, New Zealand. He did his PhD from University of Technology Malaysia. His field of study is information technology and networks. Currently he is serving as associate professor at the faculty of computing and informatics Universiti Malaysia Sabah, Sabah, Malaysia. Complete video of this lecture is available on comstech-oic youtube channel.

36. Webinar on Science Diplomacy during COVID19

Speakers of a webinar on science diplomacy during COVID-19 agreed that a coordinated effort of diplomats, experts, research institutions, universities, consortiums and social and material scientists is the need of the hour to foster science diplomacy. The webinar was jointly organized by COMSTECH, Institute of Peace and Diplomatic Studies and Inter University Consortium for Promotion of Social Sciences Humanities and Arts.

Coordinator General, COMSTECH, Prof. Dr. Iqbal Chaudhary in his welcoming remarks said that never in the history of humanity such crisis emerged like COVID-19. He said that we have seen the

COMSTech Yearbook 2020

failure of the international diplomacy and science diplomacy during this pandemic period. LDCs were left alone to handle a health, social and economic crisis of unparalleled magnitude. He mentioned that the post-COVID-19 period will be a pre-pandemic period and after conducting analysis of previous pandemics he predicted that the next pandemic would be in six years of time. Never in the history of humanity science and technology was so promptly deployed to face a global pandemic, he appreciated.



High Commissioner of Pakistan to Bangladesh, Mr. Imran Ahmed Siddiqui, said that political and diplomatic interests are very closely linked to S&T and there is a need for comprehensive strategy for science diplomacy. He stressed that the economic growth is all about productivity and it is not possible without focusing on science and technological development. He indicated that involving private sector is most important for economic growth.

Vice Chancellor of QAU, Prof. Dr. Muhammad Ali Shah pointed out that organizations like COMSTech, Diplomats, Universities and Research Organizations can combine together and foster science diplomacy. He said that policies are made by policy experts, and implemented by institutions, universities and civil society. He has informed that as partner University with COMSTech. We are trying to develop a consortium of 20 universities from OIC member states to look at COVID-19 and many more interests, like economic, health, earth sciences and



many other areas of interest. He stressed the use of online platform for education, interaction and discussions.

Mr. Kamran Akhtar Malik, DG, ACDIS, MoFA, Pakistan said that the role of science in diplomacy is not new. Diplomacy has been used to facilitate S&T. Covid-19 reinforced the significance of science diplomacy. He pointed out that science diplomacy is not limited to health, science diplomacy encompasses entire spectrum of S&T areas. He highlighted many diplomatic efforts taken during this pandemic. He recommended adopting multidisciplinary approach for science diplomacy and involving multiple facilitating agencies in the process. He further mentioned that COMSTECH, MoST and Universities conduct proper mapping and foresight activities for diplomats.

Farhat Asif, Founder President, Institute of Peace and Diplomatic Studies, moderated the entire session and explained the aim and reasons behind hosting the Webinar to promote emerging forms of diplomacy and building coalitions amongst the scientists and diplomats in order to boost cooperation to further promote the quick and effective response to the rising national, regional and global challenges and pandemics.

The Webinar was livestreamed and attended by larger number of Diplomats, Ambassadors, Students, Faculty Members and member of civil society with keen interest in Science Diplomacy.

Video of this webinar is available on comstech-oic youtube channel.

37. Webinar on Science Communication

Science communication is a neglected area in the developing world and we should look at it as a mainstream profession and discipline just like we look at microbiology, physics, chemistry,

COMSTech Yearbook 2020

and engineering, said Dr. Mahaletchumy Arujanan, while addressing an online webinar on science communication.

She said that Covid-19 taught us a lot of lessons one of which is lack of science literacy among not only in general public but also in policy makers and politicians which was reflected from their statements that did not stand with science.



While talking about the importance of science and technology she asked, is there any country in the world that has developed without strong pillars of science, technology and innovation? She said that the science and technology is the driver of economic development and the general public, politicians, and policy makers need to have a strong science literacy and defined that science literacy means basic knowledge of science to make decisions.

She stressed the development of science culture, so that people like to visit science theater, science museums and science café in their free time and discuss science on dining table. She stressed the need of making science part of culture for a good science communication.

She mentioned that without public acceptance science cannot be commercialized. She stressed the need of science acceptance by the societies by mentioning that nothing can be accepted blindly, the science has to be tested, proven, and validated for acceptance and once it is tested, proven, and validated, public should be open minded and must be able to evaluate the information and accept it. Science is for everyone, and citizens should participate in science decisions, she urged.



She indicated that the policies, regulations and guidelines which are not based on science can be dangerous and suggested that policies, regulations and funding mechanisms should be based on science.

She urged scientists to become science communicators. There are benefits of science communication. Scientists can influence regulations, raise funding, garner attention, and initiate collaboration with industry by just communicating their research in simple words. Institutional support, political support, commercialization, and public acceptance can only be achieved by science communication, she informed.

She described the fundamental techniques and strategies of science communication in her webinar for science communicators and who are aspirant to be.

At the end of her talk she quoted famous physicist, Richard Feynman "The ultimate test of your knowledge is your capacity to convey it to another".

Prof. Dr. Iqbal Choudhary, Coordinator General, COMSTech, introduced the speaker and the topic to the audience and said that the lack of science communication has been seen during the COVID-19 pandemic and stressed the need of science communication.

This webinar was organized by COMSTech, more than 75 researchers attended it online. Dr. Mahaletchumy Arujanan, Executive Director, Malaysian Biotechnology Information Centre, and Global Coordinator, International Service for the Acquisition of Agribiotech Applications delivered this webinar.

Video of this webinar is available on comstech-oic youtube channel.

38. Webinar on Hepatitis B and C: “Discovery to Elimination 2030”

On the Occasion of World Hepatitis Day, COMSTECH arranged web based seminar to discuss diagnosis and prophylaxis of Hepatitis B & C.



Dr. Wasim talked about targets for the elimination of Hepatitis B & C by 2030. He highlighted the discovery of both HBV and HCV and the prospects of global elimination as per WHO's vision of 2030 elimination target. This webinar was attended by a large number of health experts, physicians, academicians, scientists, public health officials and general public from OIC member states.

Prof. Dr. Wasim Jafri, is Professor of Medicine, Consultant, Gastroenterologist & Hepatologist, Director World Gastroenterology Training Centre, Aga Khan University and Director centre of Digestive and Liver diseases South City Hospital Karachi Pakistan conducted this seminar.

This webinar is available on comstech-oic youtube channel.

39. Webinar on Intellectual Property Rights for Scientists

Muslim scientists are still recognized with significant contribution to science. Muslims were at the peak of science. All the science that provided the seeding to western culture and societies came from Muslim countries, said Dr. Niazi. He asked what went wrong then, and answered that we lost the link between science and technology because of the sultans. We did not allow the enough freedom, we preferred to be sultans rather than leaders of the society. This is the exactly what happened for the Muslims' decline, he observed while addressing a seminar on



COMSTECH

COMSTECH Yearbook 2020

'intellectual property rights for scientists' organized by COMSTECH.



Bring forward science and scientists from the corner for coming back to higher level of economic growth and innovation, he urged. Scientists are the one who make difference in how a country progresses, how a society develops so there are lot of obligations on scientists, Prof. Dr. Sarfaraz K. Niazi said.

Dr. Niazi mentioned that many OIC or developing countries are very smart in the use of available minimal input resources and getting high value output but not good in producing higher GDP because of the missing factor of entrepreneurship. Productivity and efficiency do not necessarily always result in better GDP. It requires a covalent bond between the innovation, GDP and entrepreneurship.

The number of patents is one indication of innovation. A patent gives you the economic advantage for taking a product to the market and making a GDP contribution out of it. Patent is not an intellectual exercise it is a business exercise, he highlighted. The role of patent is to encourage technological innovation, promote competition and investment and to provide information on the latest technical developments and promote technology transfer, he said.

The scientists of OIC countries are no less smart than any other country Europe and US combined. We have to find the missing link and one of the links is to find how do we get them to secure IP specially in those jurisdictions where it matters. He encouraged the countries which are not part of the patent cooperation treaty (PCT) should become as soon as possible.

COMSTECH Yearbook 2020

He said, planning is where the value is, nobody has money or time to waste in research which is not productive, plan to answer, how you will create a value proposition instead of just a proposition. He encouraged the scientists to do research for patenting not just for publishing.

You are a part of global economy, the value you create is a global value, creating value is your moral obligation and responsibility, he reminded. Improving the lives of people living around the world is the moral obligation of scientists. Islamic countries need a quick revival, scientists should take more practical approach like China, Japan, South Korea which are great examples, he informed.

Dr. Niazi defined IP, patents, trade mark and its types and the method of filing and securing protection in detail. He talked about treaties and conventions, plagiarism and copyright along with the history of patenting in his lecture.

Professor Dr. Sarfaraz K. Niazi, FRSB, FPAMS, FACB, SI, is a patent law practitioner in the US, an entrepreneur, a teacher and researcher. He owns more than 200 US patents, authored over 100 research papers and 60+ major technology books. He serves on the editorial board of several journals and a fellow of Royal Society, Pakistan Academy of Medical Sciences and American Society of Clinical Biochemistry. In 2013, he received Sitara-e-Imtiaz from the President of Pakistan. He has hosted a radio show at Voice of America every week for more than seven years. Professor Niazi has been helping the HEC in developing US IP for the Pakistani scientists for more than 15 years.

This seminar was jointly organized by COMSTECH, ICCBS, and Sindh Innovation, Research, and Education Network (SIREN).



COMSTech

COMSTech Yearbook 2020

40. Webinar on light and polymers

Prof. Dr. Yusuf Yagci, Professor of Chemistry, Istanbul Technical University, Turkey, discussed the development and application of light based technologies and their impact on electronics, medicine, and natural sciences in his COMSTech webinar. Complete lecture is available on COMSTech Youtube channel “comstech-oic”.



41. Webinar on Sustainable Water Management

Water, sanitation, hygiene and waste management for reducing the COVID-19 virus. Water scarcity, poor water quality and inadequate sanitation impact on food security, livelihood choices and educational opportunities for poor families across the world were the key point of this webinar delivered by Dr. Jamaluddin Ahmed.



He talked about global strategy for the sustainable management of water resources. He stressed the importance of water in human lives and in other species as well, and addresses the problem of water scarcity, especially in developing countries.

He stressed the need to reduce the misuse of ground- & surface-water resources in homes by increasing public awareness; to Develop Environmentally Sound Technologies (ESTs) for grey-water & wastewater treatments and supplying pure water for urban, agriculture and domestic uses. He also stressed to develop low cost arsenic mitigation technologies for

COMSTech Yearbook 2020

groundwater to supply arsenic polluted area, developing technology to preserve rainwater for harvesting and also to develop low cost technologies to remove salinity from seawater in coastal area for supplying drinking water to poor people.

Dr. Jamaluddin highlighted the need of significant investment in our education, research, and training for saving our future generations and said that analytical chemistry is key to that endeavor.

42. Webinar on Plants and their Metabolites as Leading Molecules for Pharmaceutical Industry

COMSTech webinar on “plants and their metabolites as leading molecules for pharmaceutical industry” conducted by renowned Turkish scientist, Prof. Dr. Ilkay Erdogan Orhan of Gazi University, Turkey. Biological and chemical scientists from Pakistan, Turkey, Cameroon, Bangladesh, Iran, Indonesia, Sudan, Azerbaijan, Senegal, Nepal and Ethiopia attended this webinar.



Dr. Ilkay discussed the diversity among plant metabolites for their medicinal use and delved into combination of in-vitro, in-vivo, and in-silico methods used for novel molecule prediction. She enlightened audience about innovation and patent related aspects of this field. She also shared the initiatives taken by the Turkish government to promote and engage scientists and academia in commercial aspects of this field of study.

Prof. Dr. Ilkay Erdogan Orhan secured a Ph.D. degree in Pharmacognosy from the Faculty of Pharmacy, Gazi University, Turkey in 2002. She is Dean of Faculty of Pharmacy, Gazi



COMSTECH

COMSTECH Yearbook 2020

University, Turkey. She has been conferred with the OWSD, COMSTECH, L’Oreal and Turkish Academy of Sciences’ awards.

43. Webinar on Opportunities for Production of Biosimilar Medicines in OIC

Dr. Azad suggested that the area of drug discovery and development is promising for Islamic countries to productively collaborate, “rational” bio-prospecting of the Biota. The pharmaceutical research have huge potential in the Islamic world that can be materialized through multinational and multidisciplinary collaboration between research groups possessing complementary expertise and facilities, said Prof. Dr. Ahmed Abdullah Azad, Chief Research Scientist, Commonwealth Scientific and Industrial Research Organisation, Division of Biotechnology, Melbourne, Australia, while addressing COMSTECH webinar on “opportunities for production of affordable biosimilar medicines, and plant-based novel therapeutics in the Islamic world.



Many resource and technology poor Islamic countries, with valuable human and intellectual capital, must be provided the opportunity to contribute to competitive research that benefits them and the Islamic world, he urged. Pharmaceutical and biotechnology research in the Islamic world would greatly benefit from access to cutting-edge technologies and uniform and common IP and regulatory guidelines. COMSTECH, with support of Islamic Development Bank, could play a catalytic role by enabling and coordinating the development of world-class Biomolecular research capacity in OIC-member countries, he suggested.

COMSTech Yearbook 2020

Dr. Azad pointed out that a substantial amount of material for the production of generic medicines is sourced from developing countries including some in the Islamic world. He explained how the pipeline of new small-molecule drugs, from which generic medicines are copied, have almost dried up as multinational drug companies have turned their attention to a new class of very efficacious protein-based pharmaceuticals (Biologics).

The earlier versions of Biologics were human enzymes, hormones, growth factors and cytokines produced by recombinant DNA technologies. The latest versions are monoclonal antibody (Mab)-type molecules, he explained.

These new generations of life-saving drugs are extremely expensive (at least \$50,000 per patient a year) and simply beyond the means of most people and poor countries of the developing and Islamic world, Dr. Azad mentioned.

There is, therefore a huge demand for the production of cheaper versions of these wonder drugs, termed Biosimilars, through reverse-engineering and recombinant DNA technology. As most Mab-type Biologics are under patent, copying them into Biosimilars is not easy but luckily least developed countries are exempt from patent restrictions till 2032, he informed.

Prof. Dr. Ahmed Abdullah Azad, is the Chief Research Scientist, Commonwealth Scientific and Industrial Research Organisation, Division of Biotechnology, Melbourne, Australia. His research helped in the discovery and development of the anti-Flu drug Neuraminidase. He led the research in the discovery and development, and commercialisation, of a recombinant subunit vaccine against a highly immunosuppressive virus (IBDV). Dr. Azad has more than 130 peer reviewed papers in international



COMSTech

COMSTech Yearbook 2020

journals and 10 patents. He is Fellow of five science academies, and currently is Secretary General of the Islamic-World Academy of Sciences.

Scientists, researchers and experts from Pakistan, Turkey, Iran, Indonesia, Iraq, Ethiopia, Azerbaijan and other countries joined this webinar.

44. Webinar on Mega-stability: Definition, Multi-stability, and Hidden Attractors

Multistability is one of the most important phenomena in dynamical systems. It occurs in many areas of science including physics, chemistry, biology, economics, and nature.



The attracting state of a multistable system depends on the initial conditions. Multistability can be undesirable, for example, in the design of a commercial device with specific characteristics where it must be avoided to stabilize the desired state in a noisy environment.

On the other hand, multistability allows flexibility in the system performance without changing parameters, and that can be used with the right control strategies to induce a switching between different coexisting states. Sometimes infinite attractors coexist in a dynamical system. When those infinite attractors are uncountable, the situation is called extreme multistability. However, when those infinite attractors are countable, the situation is called megastability.

In his talk Dr. Sajad investigated recent examples of megastable systems. He mentioned that we categorize them into two groups: megastable systems which are the result of infinite

COMSTECH Yearbook 2020

equilibrium points in the systems, and megastable systems which are not. He showed that in the latter case, certainly infinite hidden attractors exist.

45. Webinar on Pakistan Randomized and Observational Trial to Evaluate Corona Virus Treatment (PROTECT)

COMSTECH arranged an online seminar titled “Pakistan Randomized and Observational Trial to Evaluate Corona virus Treatment (PROTECT)” delivered by Prof. Dr. Ghazna Khalid Siddiqui on 5th June, 2020. Scientists, researchers, academicians and general public of OIC member states participated in this seminar.



At the outset she mentioned that we are living in an unprecedented time and have learned a lot in the last three months. She appreciated the role of technologies that helped people keeping in touch and let the work continue.

Before starting her presentation, she suggested COMSTECH to strive to become a vibrant OIC forum that be used for knowledge sharing, networking and learning from each other.

She briefed the audience on PROTECT Pakistan study and mentioned that the Pakistan is the first country to be ready to treat COVID-19 patients with an ethically approved, internationally registered medical treatment protocol ahead of the peak. She mentioned that the level of the public preparedness for lockdown and intensive care capacity mean that treatment is necessary to prevent spread. She informed that 14 centers nationwide are taking part in this study and 100 patients have already been treated with the PROTECT protocol. She hoped that PROTECT network will sept up Pakistan to be at



the forefront of multicenter health research for drug development post COVID-19. She disclosed that PROTECT is being extended to other Islamic countries to increase the intellectual influence of Pakistan abroad. Dr. Ghazna mentioned the current progress of the PROTECT study and the challenges which are being faced for conducting it.

Dr. Muhammad Iqbal Choudhary, while introducing her pointed out that there is a dire need of capacity building in OIC member states for clinical trials and networking among the experts for sharing knowledge and developing partnerships.

Dr. Bilge Sener from Turkey mentioned that currently same treatment is being practiced, a combination of drugs is used and it is yielding good results. She suggested that we need to develop new medicine from medicinal plants' extracts which she hoped would provide cure to this disease.

Prof. Reza, from Iran stressed the need of suggestions to deal with this unexpected novel virus. He second Dr. Ghazna's stance that treating the patients at early stage gives good results then treating them in serious conditions at later stages.

Replying to a question Dr. Ghazna stressed the need of virologists, pointed to look at different aspects of societies and this disease and search for biological agents.

Coordinator General, COMSTech informed the audience that COMSTech will soon start dedicated scholarship programme in virology and asked the participants to identify host institutions in this important field of study. He further mentioned that COMSTech website would be a hub of knowledge sharing. During the deliberations the establishment of a task force on COVID-19 and development of academic linkages for OIC suggested.

46. COMSTECH Webinar on Innovation Policy for OIC states

Dr. Syeda Tanveer Kausar Naem talked in her webinar about the relationship between Science, Technology and Innovation, the National Innovation Systems and role of STI Policies. Since the innovation systems of countries comprise several individual systems centered on specific technologies, the relevance of STI capabilities and importance of public policy instruments required towards creating a friendly business climate were discussed in detail. At the end she described the essential institutional architecture required for promotion of innovation in the member states of Organization of Islamic Cooperation (OIC).



Dr. Syeda Tanveer Kausar Naim obtained D. Phil from Sussex University, UK. She served as the Chairperson, Pakistan Council for Science and Technology. She served COMSTECH as Consultant and founded STI Policy Research and Training Centre of COMSTECH and conducted training courses on STI policy and entrepreneurship for capacity building of OIC states, provided consultancy, compiled directories, and policy documents. She remained member of UNESCO International Advisory Board (IAB) on reform of the STI system in Nigeria, and conducted technology audit for Turkey under EU 7th framework program. She also served as member of Board of Trustees of International Network for Promotion of Scientific Publications (INASP) at Oxford and as member of the quality control board of MERID project which helped create awareness in the Middle East scientific community about Horizon 2020 and other programmes of EU. She also provided STI review and advisory services to Maldives, Gambia, and Pakistan.

**47. Webinar on Pandemic Lessons for Science Communication**

The COVID-19 pandemic has accelerated the ability of researchers to reach the audiences so much more quickly. There are receptive audience, always waiting for information, and there is a lot of hunger about scientific information and research-based knowledge. Science communication is relatively a new field of study. We should organize training for journalists on science communication to educate masses and fight infodemic, said Mr. Ehsan Masood while addressing COMSTech webinar on “Pandemic lessons for science communication” held online, on Jan. 6, 2021.



He asked some basic questions; what is the criteria of lockdown, social distancing and when do we open and close borders, how do we test, trace and isolate and said that it does not relate to a sort of advance technology to answer these questions. There should have been some consensus amongst the world on it. But all of these things happening according to each country’s own standards, everyone is doing by self, may I call it pandemic of selfishness or what, He lamented.

Mr. Ehsan mentioned that in contrast, science is really fascinating. The pandemic has shown, that when researchers can set aside the desire to compete and when agree to work towards the greater shared goal, then look what can happen. He mentioned that I have not seen this level of cooperation in my 25 years long career in science journalism. The way researchers communicate with each other has been a much more collegial and cooperative endeavor.

Infodemic – a pandemic of misinformation, but also a pandemic of disinformation, which means deliberately intended to mislead or potentially to cause harm. The flow of scientific information has very heavily relied on social media. We have all benefitted massively from

COMSTech Yearbook 2020

social media. But of-course this ability to communicate so much more quickly and easily with very vast number of people has downside as well. It is fueling the infodemic. The concerning element of this is the scale and speed of it.

He concluded by saying that science is happening faster, it is being communicated faster, the regulatory process is happening quicker, many more people are now involved in the research process, we talk about citizen science, public involvement, public engagement, all these things are coming on the way on the scale that is different.

By answering the questions of the audience, he said that we need to have good research to cope with infodemic. He said that the role of local languages is most important for effective science communication. Scientists should communicate by using different communication means available.

Ehsan Masood is a personality who have inspired everyone. He has done a wonderful work in his field and has international recognition on his achievements in the field of science journalism, said Prof. Dr. M. Iqbal Choudhary, Coordinator General COMSTech while giving introductory remarks.

Dr. Iqbal said that in the context of pandemic we have seen that when the humanity was trying to meet the challenges posed by the pandemic, the human relationship has been exposed the vulnerability of humanity at large. He pointed out that we have seen gross failure of international cooperation, we have realized how important is the good governance.

He said that we have seen people struggling everywhere to communicate the right information and knowledge to the people and raised the question that how much miscommunication has caused a damage to the



humanity during this pandemic. Dr. Iqbal said that it happened because of lack of knowledge of science communication and ability to reach out to masses, but certainly it was a major failure in terms of communication. He said that it has created a niche that science communication has real importance not only to communicate science but also to meet the challenge of this magnitude.

The lecture was attended by more than 250 participants from around the globe; Pakistan, Turkey, Iran, Indonesia, Malaysia, Sri-Lanka and Azerbaijan to name a few.

Ehsan Masood is a science journalist. He is presently Nature's Editor for Editorials and also has responsibility for the journal's news coverage from Africa and the Middle East. He is the author of a number of books including *The Great Invention*, a narrative history of how GDP became the world's most influential economic indicator (Pegasus, 2016) and *Science and Islam: A History* (Second edition, Icon, 2017). He has also made documentaries on science and policy for BBC Radio 4 and was a 2017/2018 Knight Science Journalism Fellow at the Massachusetts Institute of Technology. Between 2007 and 2017 he taught science and innovation policy to students of science communication at Imperial College London.

48. Webinar on “One Health”

COMSTECH hosted a webinar on “One Health” on Dec. 17, in collaboration with UPSIGN, UK and Pakistan Academy of Sciences. Seven speakers from Pakistan, UK and Turkey addressed this webinar and attended by a large audience online.

Prof. Dr. M. Iqbal Choudhary was the chief guest of the event. He appreciated the endeavors of UPSIGN and said that after COVID it has become crucial to use One Health approach to address the



COMSTech

COMSTech Yearbook 2020

diverse challenges faced by the world today in food and health areas.

Dr. Iqrar Ahmad Khan being the moderator of the webinar, pointed out that we should not only focus on zoonoses but also look at the ecosystem as a big challenge for One Health system.

A Virtual Seminar One Health

17th December 2020 - (14-15 PST/9-10 AM UK)



Prof. Fiona Tomley
RVC
University of London



Prof. Munir Iqbal
Pirbright Institute



Dr. Khalid Mahmood
UPSIGN
UK-Pakistan



Prof. Dr. Iqrar A. Khan
PAS - UAF



Dr. Osman Dar
CHATHAM
HOUSE



Dr. Zahida Fatima
PARC



Prof. Dr. H. Seval Akgun
Baskent University



The entire developing world including Pakistan facing an increasing threat from the vector-borne diseases spreading in both farm animals and humans, which are caused, by bacteria and viruses and are transmitted by various vectors, pointed out the experts. The need for taking immediate action to protect our health through protecting our food system is stressed by the speakers of the webinar.

The uncertainty in weather with increasing temperatures, changing rainfall patterns, and increased use of pesticides have made a lot of such species resistant. Climate change is providing favorable conditions for the breeding and survival of various vectors and arthropods. This phenomenon of global warming will change the current geographical map of vector-borne diseases and will boost the emergence and reemergence of various diseases to regions, which lack either population immunity or strong public health infrastructure, warned the speakers.

Food safety has become the biggest global challenge. Unsafe food poses global health threats, endangering everyone. Unsafe food containing harmful bacteria, viruses, parasites, or chemical



substances, causes more than 200 diseases – ranging from diarrhea to cancers, informed the experts.

It was emphasized by the speakers that the large variety of diverse factors that impact production and distribution of safe food supplies, the availability of natural resources, healthy ecosystems, market globalization, climate change, political instability, and poverty all underscore the need to address these issues using a One Health approach.

49. Virtual Seminar on Saline Agriculture – Global Food Security

Salinity poses increasing threat to global food security affecting soil and water contamination making it not suitable for drinking and agriculture, concluded the speakers of an online seminar on “Saline Agriculture - Solution to Global Food Security” organized by COMSTech in collaboration with UK-Pakistan Science & Innovation Global Network (UPSIGN) and Pakistan Academy of Sciences (PAS) on September 29.

Distinguished scholars of soil salinity, soil health, water & irrigation, innovative crops, livestock and aquaculture policy, from across the globe - Morocco, Pakistan, UAE, Netherlands, United Kingdom, Egypt and The Gambia addressed the session.

Dr. Khalid Mahmood of Rothamsted Research/UPSIGN and Prof. Rana Iqar Khan, former VC University of Agriculture Faisalabad chaired the session.

Dr. Khurshid Hasanain, Adviser COMSTech appreciated the efforts of the scientists and pressed the need of working in collaboration with international partners and policy makers across OIC countries to address the challenges of salinity. He highlighted COMSTech efforts to deal with this problem.

In her keynote address Dr. Ismahane Elouafi, DG, International Biosaline Agriculture Research Institute, UAE, emphasized the need for a joined-up approach to tackle the global problem of salinity by mentioning that only 3% of the world available water is fresh and rest is all saline, we need to develop innovative solutions to grow crops and raise aquaculture species, she stressed. Prof. Steve McGrath from Rothamsted Research UK, emphasized the need for understanding importance of soil health for food production. Dr. Ragab from Center for Ecology and Hydrology UK, spoke on how to overcome salinity and improve water management for saline soils.

Prof. Kausar Abdullah Malik from FC college stressed upon the need of mitigation strategies to address soil salinity. Dr. Abdelaziz Hirich from Morocco talked on developing salt tolerant crops including Quinoa. Dr. Fatou Bojang, National Agriculture Research Institute, The Gambia, highlighted the issue of salinity affecting rice crop in her country. Dr. Choukrallah Redouane, from Morocco shared the experience of dealing with wastewater for extracting nutrients to grow horticulture and biomass crops. Dr Kate Negacz, Vrije Universiteit Netherlands discussed the importance of saline agriculture to address UNSDGs. Prof Dr. Arifa Tahir from Lahore College for Women University explained the new innovative methods of growing crops in hydroponics. Dr. Munawar Kazmi from ACIAR Pakistan informed that over 7 million hectares of land are affected by soil salinity and sodicity and secondary salinization has caused a loss of 2.0 million



COMSTech Yearbook 2020

degradation, water shortage and increasing threat from invasive species of pests and diseases. It was noted that the new varieties have low update of trace elements and essential minerals that needs to be addressed.

Prof Ratan Lal, The World Food Prize Winner 2020, was the chief guest speaker. A panel of distinguished scholars and policy makers who participated in this seminar include Dr Tina Barsby OBE, Director and Chief Executive Officer, National Institute of Agricultural Botany (NIAB), UK, Dr Shahid Mansoor, National Institute for Biotechnology and Genetic Engineering (NIBGE), Prof Iqra Ahmed Khan, former VC of University of Agriculture, Faisalabad.

The Hon. Ms. Shandana Gulzar Khan, Chairperson of the Commonwealth Women Parliamentarians (CWP) network and chair of Agri products committee in National Assembly of Pakistan informed that the government of Pakistan is keen to develop a long-term strategy to protect its natural resources, especially soil and water for the coming generations in her closing remarks.

Prof. Lal stressed the need of teaching our young generation to protect our soil's health, which is living and improve organic contents, through restoration of soil health, we can improve the human health. Resilient systems are those that can bounce back, we need to encourage urban agriculture. Good food is a good medicine, improving nutritional value. He quoted verses from the Holy Quran meaning "Eat lawful and what is good on earth".

Dr Tina Barsby said, "If the world is to grow enough food for the projected global population in 2050, agricultural productivity will have to rise by at least 60%, and may need to grow more than double. Maize, Rice, Wheat and Soybean are only increasing by



about 0.9% to 1.6% a year. We need to increase it to 2.4% per year to double yield by 2050”.

Dr. Shahid Mansoor emphasized the need of adopting the speed breeding technologies, which is a combination of red and blue lights to reduce generation time (5-6 generations in a year instead of one or two), reduce breeding time 2-3 years, adopting genomics/genomic selection and use of genetic markers to select desirable traits (such as yield, disease resistance, nutritional value, quality) both for crops and livestock.

Prof Iqar Khan alluded the need of soil stewardship schemes especially inclusion of legumes in the cropping system. Dr Khalid Mahmood thanked the speakers on behalf of UPSIGN, COMSTech and Pakistan Academy of Sciences. More than 100 participants across the globe attended this event.

51. Webinar on Nanomaterials for Sensors and Photochemical Applications

Prof. Dr. Farid Abou Rageh Mohamed Harraz said that sensors are extensively used in a wide range of applications including environmental monitoring, food industry, safety issues, diagnostic and drug discovery. He said that great efforts have been done for developing a wide range of active, sensing nanomaterials for the detection of chemical analytes either in vapor or liquid phases.



He mentioned that a considerable attention has been focused towards the development/designing of highly efficient visible light driven photocatalysts for the photodegradation, removal of highly toxic and harmful environmental pollutants. The advanced functional materials used in our research group for sensors

COMSTech Yearbook 2020

and/or photocatalysts include a wide range of semiconductor metal oxides, alone or in combination with noble metallic nanoparticles, nanocarbon materials and conducting polymers.

He gave an overview of recent research being done in the area of sensors technology (chemical sensors, electrochemical sensors and biosensors) and photochemical applications, focusing on photocatalysis under visible light illumination. He also discussed some of the practical issues and challenges with the nanomaterial synthesis and characterization as well as some key sensing parameters such as sensor sensitivity, selectivity, response time and operational and long-term stability.

52. A Public Lecture on Engagement in Medical Research to Promote National Health and Wellbeing



Current pandemic, COVID-19 has made it clear that knowledge in text books being taught is something of past and not sufficient to help tackle with the current pandemic. Research in medical is not an option, it is an obligation on us all to find new ways and means to tackle with current and future health crisis, said Prof. Dr. Khalid Saeed Khan, in his lecture delivered at COMSTech. He emphasized

general public to take part in the research process, it is beneficial for you and the generations to come.

Dr. Khalid talked about the difference between factual knowledge and the fake one. He delved deep in the research process to find fact based implementable beneficial knowledge for the humanity. He said that the health and economic development are related and both go side by side.



Dr. Khalid said that good decisions can only be made when they are research based. Decisions made on the basis of untested fake information cannot be beneficial.

He said that medical research is limited in Pakistan and the infrastructure is not available at ground level. He stressed the need of the engagement of citizens in the research process and the dissemination of research information to the masses through the internet and all other available means.

Answering to a question asked by Dr. NM Butt, a physicist and expert in nanomedicine, he stressed the need of the curriculum balance with regard to theory and practice. He totally agreed with Dr. Butt to add a research semester at MBBS level to engage the doctors in research at very early stage of their career.

More than 115 people attended this lecture in person as well as virtually on Zoom from Pakistan and other OIC member states.

Prof. Dr. Khalid Saeed Khan, distinguished investigator - Beatriz Galindo programme - at University of Granada, Spain. He has published over 400 peer-reviewed research papers with current h-index >70. Dr. Khalid has so far supervised 25 higher-degree theses. He has contributed to many trials and meta-analyses by conducting 48 primary research trials, recruiting 979,242 participants, and has published 149 systematic reviews, collating data from 6415 studies with 68,798,079 participants. Dr. Khalid is lead author of 'Systematic Reviews to Support Evidence-Based Medicine', which won a BMA Medical Book award. He remained Editor of BJOG an international Journal of Obstetrics and Gynaecology. His "Core Outcomes in Women's and Newborn Health" (CROWN) initiative was awarded a BMA Strutt and Harper grant to help reduce research waste.

53. Coordinator General, COMSTECH meets minister of science and technology

The newly appointed Coordinator General Prof. Dr. M. Iqbal Choudhary (H.I.,S.I.,T.I.) soon after taking the charge of the organization, met with the Minister of Science and Technology, Mr. Fawad Chaudhary in his office. He briefed the minister on COMSTECH existing program, such as collaborative programs with IFS, TWAS, Lindau Nobel Laureates Meetings, financial assistance for Inter-Islamic Networks, assistance for conferences, workshops, and seminars, COMSTECH awards, preparation of OIC science profile and COMSTECH research publication program.



To highlight the future plans, he mentioned COMSTECH capacity building initiative in infectious diseases (“preparing for the next pandemics”), artificial intelligence initiative for health and agriculture, science diplomacy and university-industry initiative. He emphasized the revival of the Science Technology and Innovation Organization (STIO) approved by OIC, and obtained contributions from Saudi Arabia, Turkey, Iran, and Malaysia. Prof. Choudhary mentioned that the programs and activities planned for 2020-21 are from a working paper, prepared on the instruction of the President of Pakistan who is the Chairman COMSTECH as well.

The Minister assured him the fullest support of his Ministry in fulfilling the mission of COMSTECH for science and technology cooperation in OIC member states. He has shown confidence



COMSTECH

COMSTECH Yearbook 2020

that through COMSTECH, Pakistan will also be able to build its capacity in future fields of science and technology through bilateral and multilateral cooperation with leading institutions in OIC countries.

COMSTECH is the Ministerial Standing Committee on Scientific and Technological Cooperation of the OIC (Organization of Islamic Cooperation) which was established by the Third Islamic Summit of OIC held at Makkah, Saudi Arabia in January 1981. COMSTECH is composed of all the member states of the organization represented by their ministers of science and technology or nominated representatives. The President of Pakistan is the chairman, Prime Minister of Pakistan is the co-chairman and the Coordinator General is the Chief Executive of COMSTECH which is the only OIC organization chaired by Pakistan.

54. OIC General Secretariat Interacts with the New Coordinator General COMSTECH to Discuss Various Activities

In the framework of coordination between the various OIC organs and institutions, the OIC General Secretariat and COMSTECH Secretariat held a video-conference on 16 June 2020 to interact with the new Coordinator General of COMSTECH and review the activities being carried by the two



organs in the field of Science & Technology in the context of the prevailing circumstances. H.E. Askar Mussinov, Assistant Secretary General for Science & Technology represented the OIC General Secretariat while H.E. Prof. Dr. M. Iqbal Choudhary, Coordinator General COMSTECH, represented COMSTECH Secretariat.



In his remarks, Ambassador Askar Mussinov congratulated Prof. Choudhary upon his appointment as the new Coordinator General of COMSTECH. He underlined the role of COMSTECH in promoting scientific and technical cooperation among the Member

States and commended the Government of the Islamic Republic of Pakistan for the support and the conducive environment it provides to COMSTECH. He pointed out that in the face of unprecedented challenges posed by COVID-19, all efforts of the OIC and its institutions ought to be on helping Member States to face these challenges. In this regard, Amb. Mussinov outlined the efforts made by the OIC General Secretariat and relevant OIC institutions to help the Member States in their fight against COVID-19. He also briefed about the recommendations made by the extraordinary meetings of OIC Steering Committee on Health held on 09 April 2020 and the OIC Executive Committee at the level of Foreign Ministers held on 22 April 2020 respectively. He underlined the potential role that COMSTECH can play in the implementation of many of the decisions and recommendations made by the said meetings. Amb. Askar informed that as a follow-up to the above and in the framework of closer coordination with international partners, the OIC General Secretariat held a meeting with WHO/EMRO during which potential areas of cooperation were discussed. The two sides agreed to continue working closely by establishing a joint Working Committee to identify critical areas of cooperation between the two Organisations.



COMSTech

COMSTech Yearbook 2020

Amb. Askar also called for coordinated efforts with COMSTech to ensure effective and timely implementation of the OIC STI Agenda 2026 adopted by the First OIC Summit on Science & Technology held in Astana, in September 2017. He noted that it is important to think of new mechanisms to reach out to the Member States as COVID-19 has already disrupted the established practices. He underlined the importance of engaging Member States and seeking their mandate for the activities carried out in the domain of S&T through the established platforms of the Executive Committee and the General Assembly.

Prof. Choudhary appreciated the leadership of the OIC General Secretariat for the early recognition of the danger of Covid-19 and embarking on sensitizing the Member States on the appropriate measures to stem its spread. He further pledged to provide the needed scientific input in the implementation of the decisions and recommendations of both the extraordinary meeting of SCH and the extraordinary video-conference of Executive Committee on Covid-19. He



highlighted the efforts of COMSTech in the fight against Covid-19 including identification of clinical trials/interventional studies in some of the OIC Member States against COVID-19 and their publication on COMSTech website. COMSTech also organised a virtual seminar on the topic “Pakistan Randomized and

COMSTech Yearbook 2020

Observational Trial to Evaluate Coronavirus Treatment (PROTECT)". He welcomed the ongoing engagement between the OIC General Secretariat and WHO saying that OIC can greatly benefit from WHO as a leading health agency at the global level.

Prof. Choudhary pointed out that COMSTech recognises the importance of the implementation of STI Agenda 2026 and the need to generate a number of actions and activities that can be reported to the 2nd OIC Summit on Science & Technology whenever it is held. He was happy to note that eight OIC institutions regularly send their reports to the COMSTech on the actions they carrying out in the implementation of the STI Agenda. He promised to convene the meeting of the Steering Committee as soon as the circumstances allow to redefine their focus given the prevailing situation of COVID-19 pandemic. He also admitted that the Executive Committee and General Assembly meetings of the COMSTech are long overdue and expressed commitment to convene them at the earliest opportunity possible.

55. First Meeting of COMSTech Scientific Advisory Council Held

COMSTech Scientific Advisory Council comprises upon 15 eminent scientists and science leaders from Pakistan, Saudi Arabia, Malaysia, Senegal, Egypt, Algeria, Oman, Sudan, Jordan, Kazakhstan, Qatar, Lebanon, and Turkey. All fifteen members of the advisory council participated in first meeting held online on January 27, 2021.

In his introductory remarks, Coordinator General COMSTech, Prof. Dr. M. Iqbal Choudhary, briefed the council on the establishment, role, aims and objectives of COMSTech, its mechanism of work and collaboration with OIC institutions and international organizations. Dr. Choudhary mentioned current



programmes and past progress of COMSTech, and shared the organization's strategic priorities. He cited the resolutions that emanated from the first OIC Summit - held in Kazakhstan in 2017 – that essentially called on COMSTech to strengthen cooperation between OIC countries in the domain of STI capacity building and policy formulation, as well as in developing STI monitoring mechanisms. Dr Choudhary also requested the council members to review the existing programmes of COMSTech, and advise its leadership on how COMSTech can emerge as a more effective organization for S&T based development.

Dr. Zou'bi, Former Director General, Islamic World Academy of Sciences, Science Adviser, InterAction Council, Co-Founding Director, World Sustainability Forum, Hashemite Kingdom of Jordan, introduced a brief synopsis on past and present science advisory mechanisms in OIC countries, identified institutional and individual advisors from the OIC and highlighted the importance that countries such as the US attach to the position of science advisor. He identified policy gaps/problems in the STI ecosystems in OIC countries that can be studied/discussed by COMSTech advisory council including recognising the best science advisory mechanisms, and addressing the apparent lack of STI policies and STI observatories in such countries. He termed the onset of the COVID-19 pandemic as a development game changer that has affected all countries. He proposed a number of deliverables that COMSTech-SAC can accomplish including generating templates of STI policy instruments for OIC countries as well as an all-encompassing report on the status of STI in OIC countries to be presented to the OIC hierarchy.

Dr Atta-ur-Rahman, FRS who has served as Coordinator General, COMSTech, (Ex-Advisor and Federal Minister of Science &

COMSTECH Yearbook 2020

Technology and Information Technology, as well as Chairman, Higher Education Commission of Pakistan) identified four specific areas that can be the subject of analysis and action by COMSTECH and COMSTECH-SAC respectively, including; (1) strengthening COMSTECH networks and founding new ones to cover topics such as AI, Nanomedicine, Virology, Biofuels and Energy Storage Systems, Advanced Genomics etc. (2) revamping the Science, Technology and Innovation Organisation (STIO); (3) carrying out foresight studies; and (4) developing models university-industry interactions. Dr. Rahman concluded by highlighting Pakistan's effective national response to the COVID-19 pandemic.

Dr. Sindi, Senior Scientific Adviser to the President (IsDB) on Science, Technology and Innovation, presented an overview of the activities undertaken by the Islamic Development Bank (IsDB) in the domain of STI, essentially to nurture economic growth and help member-countries achieve the SDGs; activities which included establishing an S&T department within the Bank, the launch of the US\$500 million Transform Fund and the Engage Platform, primarily to empower the S&T and innovation ecosystems in OIC countries. Dr. Sindi mentioned the establishment of an IP unit to support innovation in member countries, and highlighted efforts to integrate STI efforts with those of national institutional and individual stakeholders, and referred to collecting and disseminating good practices in the domain. Dr. Sindi also highlighted IsDB's response to the COVID-19 pandemic which was based on open-science and open innovation, and concluded by proposing a number of roles for COMSTECH-SAC in line with the strategy of the IsDB.

Dr Zakri, who has served as Science Advisor to the Prime Minister of Malaysia, commended the work of the Islamic



Development Bank in the domain of STI and highlighted the activities of IsDB's Transform Fund. He also highlighted the role of the International Network of Government Science Advisors (INGSA) in the Science-Policy nexus adding that a national science advisory mechanism was the last piece of the giant jigsaw making up the national/international STI ecosystems.

Dr. Ousmane Kane, former Researcher and Director General of the Institute of Food Technology (ITA) and former Executive Director of the African Regional Centre (ARCT), Republic of Senegal, highlighted the issue of the COVID-19 vaccines that have been developed in response to the pandemic, adding that there were no clear strategies in OIC countries to manage the vaccination processes. Under the leadership of COMSTech, an effort would need to be initiated if the vaccination processes are to be successful in particular to advise on the choice of the vaccine, he added.

Dr. Djeflat, Chairman, The Maghtech Network, senior fellow Clersé-CNRS Research Center and Associate Senior Researcher CREAD- Algiers, Algeria, said that although many countries boasted a variety of STI institutions, the effectiveness of such institutions was lacking. He suggested that national STI roadmaps have to be reviewed to render the STI enterprise more productive. He expressed his support of the OIC networks that COMSTech had established and suggested that countries in the West may at some point host such networks.

Dr. Al-Naimi, Chairman of the Doha International Centre for Interfaith Dialogue (DICID), Qatar, suggested that OIC countries need to prioritize their objectives and focus on specific issues in the domain of STI. He highlighted the important role of the Qatar National Research Fund (QNRF) as a possible sponsor of joint research programmes between OIC researchers and their counterparts from Qatar-based research centres and institutions.

COMSTech Yearbook 2020

Dr. Mouïñ Hamzé, Secretary General, National Council for Scientific Research (CNRS), Lebanon, highlighted the fact that there was a wealth of STI policies and strategies in OIC countries, however, there were many problems that hindered the adoption and application of such policies including but not only the dearth of financial resources, but also the limited trust between decision-makers and the scientific community at the national level. This was highlighted at the world level with onset of the COVID-19 pandemic, he added. There was a need for our countries to be more proactive and that ethics should be at the centre of the STI network.

Dr. El-Kharraz, Head of Research, Middle East Desalination Research Centre (MEDRC), Oman, suggested that the duplication of efforts in the domain of STI should be avoided, and that an attempt should be made to map the STI landscape and STI policies in OIC countries. He added that the onset of the COVID-19 pandemic has highlighted the need to localise technology, and support SMEs to achieve such a goal. He also highlighted a number of new areas that can be looked at including big data, artificial intelligence, green hydrogen, food and energy security, as well as climate change. He suggested that COMSTech-SAC should bring in added value and play the role of an observatory of the STI activities ongoing in the region for benchmarking and programme implementing purposes.

The representative of TUBITAK recalled the various STI-related decisions of the OIC Summit of 2017, and the efforts of COMSTech to establish to an R&D Fund for OIC countries.

Meeting ended with the vote of thanks by the Coordinator General COMSTech, and informed that the next meeting will be held in Islamabad (in-person) in April/May 2021.

Members of the COMSTech Scientific Advisory Council



From top left to right: H.E. Prof. Dr. Muhammad Iqbal Choudhary, H.E. Prof. Dr. Atta-ur-Rahman, H.E. Dr. Hayat Sulaiman Sindji, H.E. Tan Sri Dr. Zakri bin Abdul Hamid, H.E. Prof. Dr. Ousmane KANE, H.E. Prof. Dr. Mahmoud Sakr, H.E. Prof. Abdelkader DJEFLAT, H.E. Dr. Jauad El-Kharraz, H.E. Prof. Dr. Samia Satti Osman Mohamed Nour, H.E. Dr. Moneef R. Zou'bi, H.E. Prof. Dr. Galym Mutanov, H.E. Prof. Dr. Ibrahim bin Saleh Alnaimi, H.E. Prof. Mouin Hamzé, H.E. Prof. Dr. Hasan MANDAL, and H.E. Dr. Fahad M. Alturki

56. OIC, WHO and COMSTech Discusses Formation of Regional Working Group on Health

Officials of WHO-EMRO-OIC Working Group, and COMSTech held a video meeting on 1st July 2020 to discuss the challenges of the COVID-19 pandemic in the OIC countries of the region. The immediate focus of the planned Working Group would be to build institutional capacity of the OIC member states to combat the virus, including training of health workers, standardization of indigenous medical technology and clinical trials etc. In the longer run, the group would address other pressing and widespread public health issues of OIC member states.

COMSTECH Yearbook 2020

The Coordinator General COMSTECH, Prof. Dr. M. Iqbal Choudhary expressed the full support of COMSTECH for realizing the goals of the planned Working Group and offered to host its activities with the support of OIC and WHO. The meeting was attended by Dr Jaffar Hussain Syed, Chef De Cabinet, World Health Organisation (WHO) Regional Office, EMR, Cairo, Egypt, and Dr. Yagob Yousef Al-Mazrou, Secretary General, the Saudi Health Council and Chairman, Islamic Advisory Group on Polio Eradication, Dr. S. Khurshid Hasanain, Adviser COMSTECH, Mr. Ifran Shaukat, Director General (S&T), OIC General Secretariat, Mr. Abdunur M. Sekindi, Professional Officer, Science & Technology Affairs Department, OIC General Secretariat.

57. Coordinator General COMSTECH Meets President of AJK

Coordinator General COMSTECH, H. E. Prof. Dr. M. Iqbal Choudhary had a meeting with the President of Azad Jammu and Kashmir (AJK), H. E. Sardar Masood Khan at Kashmir House, Islamabad, on Thursday, July 1, 2020. The implementation



of various Inter-Islamic initiatives, including training programs in future sciences by engaging leading experts from the OIC region and beyond were part of discussions. The Coordinator General invited the President AJK to visit COMSTECH headquarters which was generously accepted by the President. Coordinator General also presented the COMSTECH shield to the President.

58. COMSTECH Networks OIC Labs to Develop Diagnostic Kits for COVID-19

To network OIC institutions for the development of diagnostic kits for COVID-19, the Coordinator General COMSTECH, Prof. Dr. M. Iqbal Choudhary had a virtual meeting with 22 scientists and



heads of the virology diagnostic laboratories in Saudi Arabia, Indonesia, Azerbaijan, Gambia, Sénégal, Nigeria, Bangladesh, Pakistan, Egypt, and Azerbaijan. The meeting was aimed at exploring avenues of intra-OIC collaboration for capacity building of the laboratories.

The participants of the meeting emphasized the need of assessing the current available facilities, resources and workforce, equipping the labs with minimum standards, supporting technology transfer, training of technicians and ensuring the availability of skilled manpower, and initiating collaborative projects. All participants offered their full support to COMSTech intra-OIC cooperation initiative for coping with the current and any future pandemics.

Responding to the suggestions of the participants Dr. Choudhary offered two online training courses in collaboration with the International Center for Chemical and Biological Sciences, Karachi, and National University of Science and Technology, Islamabad, this year for building capacities of the scientists in testing and developing diagnostic kits for COVID-19.

To further enhance testing capacities of OIC member states, COMSTech has submitted a proposal to Islamic Development Bank which aims to enhance testing capacities of the targeted countries by developing RT Loop-mediated Isothermal Amplification (LAMP) and Antibodies (IgG/IgM) based detection kits for the SARS-CoV-2 diagnosis. These kits can be used without sophisticated diagnostic infrastructure. COMSTech in collaboration with the International Centre for Chemical and Biological Sciences, Karachi, Pakistan is planning to help the OIC institutions in developing the mentioned kits. Seventeen OIC institutions have already shared their interest in benefiting from this opportunity.

COMSTECH Yearbook 2020

59. H.E. Ambassador of Uzbekistan Visits COMSTECH

His Excellency Lt. Col. Saadulla Tashmatov, Acting Ambassador of the Republic of Uzbekistan visited COMSTECH on Monday, July 06, 2020 and met with the Senior Officials of COMSTECH.

Prof. Dr. Khurshid Hasanain, Adviser COMSTECH shared with the Ambassador, some previous activities organized jointly including the “First OIC Robotics Challenge” organized in October 2019 at Tashkent, Uzbekistan and new proposal of developing Technology Parks.

Mr. Aftab H. Zaidi, Director HR & Administration COMSTECH apprised the Ambassador about new initiatives and programs undertaken by COMSTECH and shared a list of programmes and activities.

H.E. Lt. Col. Saadulla Tashmatov informed that the Deputy Foreign Minister of Uzbekistan would like to have an online meeting with H.E. Prof. Dr. M. Iqbal Choudhary, Coordinator General COMSTECH with the coordination of Uzbekistan Embassy in Islamabad.

60. Steering committee meeting for Implementation of the OIC S&T Agenda

The Assistant Secretary General (S&T) of the OIC, Ambassador Askar Mussinov, informed an online meeting of all the S&T OIC organs of the OIC that due to the continuing pandemic situation, the next S&T Summit of the OIC would be held on-line in early December and would be organized by the Government of the UAE. He stated that the Summit would provide an opportunity for the member States to reaffirm their national commitments towards cooperation in science and technology and for strengthening actions at the science-policy interface. He was addressing the Steering Committee for Implementation of



the OIC Science and Technology Agenda comprising the Heads of twelve OIC organs in an online meeting organized by COMSTECH.

The Coordinator General of COMSTECH, Prof. Dr. M. Iqbal Choudhary, shared with the members that the 1st Summit was held in 2017 in Astana, Kazakhstan, and had approved a vision and broad plans for a ten-year agenda of scientific and technological development of the OIC member states. This Agenda, known as the STI Agenda 2026, has been developed further by COMSTECH as a series of action programs and initiatives for major priority areas such as food security, health and medicine, skilled manpower development, and frontier areas of science and technology etc. COMSTECH has been coordinating the efforts of all partners in the OIC for implementing various programs in these priority areas.

Prof. Dr. M. Iqbal Choudhary appreciated the role of OIC institutions in implementation of the STI Agenda 2026 and requested the institutions to forward their suggestions and achievements made in science, technology and innovation of the OIC countries in the past three years. These suggestions could form the basis of the concept paper and working documents of the upcoming Summit.

61. COMSTECH and IUCr's Meeting for Joint Projects

International Union of Crystallography (IUCr) and COMSTECH agree to start joint projects in the field of crystallography for OIC member states in a virtual meeting. COMSTECH and IUCr will collaborate to promote Science and Technology via X-ray crystallography in African and Central Asian OIC member states. The meeting was attended by Prof. Dr. M. Iqbal Choudhary

COMSTECH Yearbook 2020

(Coordinator general COMSTECH), Dr. Samar Hasnain (University of Liverpool), Dr. Sven Liden (IUCr President), Mr. Michele Zima (IUCr Outreach officer), Mr. Alex Ashcroft (IUCr Executive Secretary), and Dr. Smmer Yousuf (Associate Professor, ICCBS).

The Coordinator General COMSTECH, Prof. Dr. M. Iqbal Choudhary, briefed the participants on the current and the future programmes and initiatives of COMSTECH and highlighted the mutual benefits of the IUCr and COMSTECH joint collaborative projects. Responding to Prof. Choudhary, President of IUCr, Prof. Sven Liden agreed to initiate collaborative projects with COMSTECH and invited Prof. Choudhary to attend general assembly of IUCr.

This meeting was facilitated by Prof. Dr. Samar Hasnain, an acclaimed mentor of crystallographic community in Pakistan. COMSTECH and IUCr upon suggestion of Prof. Dr. Samar Hasnain, agreed to plan activities through targeting countries like Cameroon, Nigeria and Kazakhstan.

Prof. Dr. M. Iqbal Choudhary, termed this meeting historical with the confidence of vibrant collaboration between the two organizations and appreciated the leadership and the team of the IUCr in his concluding remarks.

62. Coordinator General COMSTECH Participates in 47th Session of CFM

Coordinator General, COMSTECH Prof. Dr. M. Iqbal Choudhary participated in the 47th session of the Council of Foreign Ministers (CFM) of the Organization of Islamic Cooperation (OIC) held in Niamey, Niger, on November 27-28, 2020.

During the visit, Prof. Iqbal had sideline bilateral meetings with the Director-General of the Islamic World Educational, Scientific



COMSTech

COMSTech Yearbook 2020

and Cultural Organization (ICESCO) and the representative of the Standards and Metrology Institute of Islamic Countries (SMIIC)

He also had meetings with the head/representatives of OIC institutions and discussed bilateral and multilateral cooperation between OIC institutions for capacity building in the area of science and technology for the socio-economic growth of the Muslim world.



Representatives of 57 OIC Member States and five Observer States of OIC attended 47th session of the CFM.

63. Ambassador of Yemen lauds COMSTech services

H.E. Mr. Mohammed Motahar Al Ashabi, Ambassador of the Republic of Yemen in Pakistan paid a visit to COMSTech on December 18. He met with Prof. Dr. M. Iqbal Choudhary, Coordinator General, COMSTech and discussed programmes and new initiatives of COMSTech.

The Coordinator General gave him a detailed briefing on COMSTech achievements and current programmes and future plans. Prof. Iqbal also shared with him the contribution of COMSTech programmes made to Yemen.



Coordinator General informed him about the new initiative of COMSTech Consortium of Excellence comprise of leading institutions of Pakistan and OIC countries and invited Yemeni students to benefit from the research excellence through visits.

COMSTECH Yearbook 2020

H.E. Mr. Mohammed Motahar Al Ashabi lauded COMSTECH efforts, its contribution to the OIC member states for scientific and technological uplift and appreciated the current programmes and the vision.

The dignitaries also explored the avenues of bilateral joint initiatives for the development of socio-economic conditions in the OIC member states.

During the meeting the Ambassador of Yemen presented the souvenir of honor to Prof. Dr. M. Iqbal Choudhary and the Coordinator General COMSTECH presented the shield of memento to his excellency.

64. COMSTECH Outreach Activities

In 2020, COMSTECH Facebook page, Twitter handle and Youtube channel were created on the direction of the new Coordinator General.

COMSTECH website redesigned, upgraded and developed in three OIC languages.

COMSTECH introductory documentary was made.

COMSTECH bi-monthly newsletter started.



COMSTECH

COMSTECH Yearbook 2020

65. Meetings of Coordinator General COMSTECH



H.E. Prof. Dr. M. Iqbal Choudhary, Coordinator General COMSTECH met with Mr. Muhammad Naeem, Chairman Pakistan Atomic Energy Commission on Monday, 29th June,

2020 and deliberated on several collaborative projects for capacity building of OIC Member States in S&T.



Coordinator General COMSTECH met with H. E. Mr. Muhammad Azam Khan Swati Minister for Narcotics Control.

COMSTECH Yearbook 2020



H.E. Prof. Dr. M. Iqbal Choudhary, Coordinator General COMSTECH met with H.E. Ambassador Sohail Mahmood, Foreign Secretary of Pakistan on Thursday, 4th June, 2020. Mr. Muhammad Kamran Akhtar, Director General (ACDIS) and Mr. Tariq Karim, Director General (EC & OCI), Ministry of Foreign Affairs (MoFA) were also present in the meeting.



Dr. Abdur Rashid, Director, DRAP and Dr. Ghazna Khalid Siddiqui MNA and Member, Task Force of Ministry of

Science and Technology of Pakistan on COVID-19 had meeting with Coordinator General COMSTECH Prof. Dr. M. Iqbal Choudhary, in his office.



COMSTECH

COMSTECH Yearbook 2020



Prof. Dr. M. Iqbal Choudhary, Coordinator General COMSTECH met with the honourable Lt. Gen. Naweed Zaman, Rector of National University of Sciences and Technology

(NUST), Islamabad, Pakistan on 16th June 2020. The dignitaries discussed opportunities of mutual interest, and agreed to extend cooperation to build a strong collaboration mechanism to deal with emerging challenges of the post-COVID-19 world.



On July 9, 2020, Coordinator General COMSTECH Prof. Dr. M. Iqbal Choudhary and Dr. Khurshid Hasanain, Adviser COMSTECH held a video-conference with Deputy Minister of Foreign Affairs of the Republic of Uzbekistan Mr. Furkat Sidikov, the state and prospects of strengthening Uzbekistan's cooperation with COMSTECH in science and technology amid the COVID-19 pandemic were discussed during the conversation.



H.E. Prof. Dr. M. Iqbal Choudhary, Coordinator General COMSTECH met with Mr. Shoaib Ahmed Siddiqui, Federal Secretary, Ministry of Information Technology and Telecommunications of Pakistan on Thursday, 4th June, 2020.



H.E. Prof. Dr. M. Iqbal Choudhary, Coordinator General COMSTECH met with Maj. Gen. Amer Ikram, Executive Director, National Institute of Health (NIH), Islamabad, Pakistan on Thursday, 4th June, 2020. The matters related to joint collaboration between COMSTECH and NIH were discussed in detail and agreed to start various joint activities.

WWW.COMSTECH.ORG

COMSTECH Secretariat
33-Constitution Avenue
G-5/2, Islamabad, Pakistan