



The Fourth Scientific Conference of Ain Shams University  
Towards a National Innovation System  
Current Indicators and Future Prospects

**1st International Scientific Workshop on Biosensor Technology & Molecular Imprinted Polymers**  
**Potential Application of Theranostics, Food Safety and Environment**

Grand Hall at the Guest House  
2015 April 29-28

Under the Auspices of  
ENG. Ibrahim Mehleb  
The Prime Minister

Conference Chair  
Prof. Dr. Hussein Eissa  
President of Ain Shams University

Conference Executive Chair  
Prof. Ali Abdel Aziz Ali  
Vice President for Graduate Studies and Research

Prof. Dr. Al-Sayed Abdel-Khaleq  
Minister of Higher Education

Prof. Dr. Sheiref Hamad  
State Minister for scientific research

Workshop Chair  
Dr. Assem Abolmaaty Sayed Ahmed  
Director of International Collaboration  
Technology Innovation Commercialization Office

Workshop Executive Chair  
Dr. Hossam Sayour  
Associate Professor of Bio-Analytical Chemistry  
Biomedical Chemistry Unit  
Animal Health Research Institute



Topic	Place	
Monday, 27 April 2015		
16:30-17:30	Registration	
18:00-21:00	Open ceremony of Fourth scientific conference of Ain Shams University entitled "Towards a National Innovation System" Current Indicators and Future Prospects. At Grand Conference Hall, Faculty of Pharmacy	
Tuesday, 28 April 2015		
9:00-9:30	Registration	
9:30-9:45	Open ceremony Welcome remarks by Dr. Hossam E. M. Sayour Associate Professor of Bioanalytical Chemistry, Biomedical Chemistry unit, Chemistry Dept., Animal Health Research Institute (AHRI)	Grand Conference Hall (Guest house)
Chairs	Dr.Assem Abolmaaty SayedAhmed Director of TICO: Technology Innovation Commercialization Office, Prof. Kenneath Shea, University of California, Irvine, USA Dr. Hossam E. M. Sayour Associate Professor of Bioanalytical Chemistry, Biomedical Chemistry unit, Chemistry Dept., Animal Health Research Institute (AHRI)	
9:45-10:30	Adaptable Synthetic Polymers as Protein and Peptide Affinity Ligands. An Alternative to the Lock and Key	Grand Conference Hall (Guest house)



	<b>Paradigm.</b> <b>Prof. Kenneath Shea (Plen. Talk)</b> Department of Chemistry, University of California, Irvine, 5042B Frederick Reines Hall, Irvine, CA92697-4575	
<b>10:30-11:00</b>	<b>Fifty-years with sensors technology.</b> <b>Professor Saad S. M. Hassan</b> Prof. Analytical Chemistry, Former Dean, Faculty of Science, Ain Shams University, 11566 Abbassia, Cairo, Egypt	<b>Grand Conference Hall (Guest house)</b>
<b>11:00-11:30</b>	<b>Introduction to WSN's with selected applications.</b> <b>Professor Hani Fikry Ragai</b> Faculty of Engineering, Electronics and Communications Department, Ain Shams University 1, Elsarayat St., Abassia, 11517, Cairo, Egypt	<b>Grand Conference Hall (Guest house)</b>
<b>11:30- 12:00</b>	<b>Lab-on-a-Chip Technology for the Detection of Disease Biomarker and Pathogens</b> <b>Dr.Assem Abolmaaty SayedAhmed</b> Director of TICO: Technology Innovation Commercialization Office; Vice Director of Cairo Mircen: Microbial Resource Center, Ain Shams University.	<b>Grand Conference Hall (Guest house)</b>
<b>12:00-12:30</b>	<b>Coffee Break</b>	<b>Reception</b>
<b>Chairs</b>	<b>Dr.Assem Abolmaaty SayedAhmed</b> Director of TICO: Technology Innovation Commercialization Office, <b>Prof. Kenneath Shea,</b> University of California, Irvine, USA <b>Dr. Hossam E. M. Sayour</b> Associate Professor of Bioanalytical Chemistry, Biomedical Chemistry unit, Chemistry Dept., Animal Health Research Institute (AHRI)	



12:30-13:15	<p><b>“Plastic antibodies” for diagnostic and in vivo applications.</b>  <b>Prof. Sergey Piletsky</b> (<a href="#">Plen. talk via video conference</a>)          Secretary-general, the International Union of Advanced Materials, Department of Chemistry, University of Leicester, Leicester LE1 7RH, UK</p>	Grand Conference Hall (Guest house)
13:15-14:00	<p><b>Computational Design of Synthetic Receptors – An overview</b>  <b>Dr. Kal Karim</b> (<a href="#">Plen. Talk via video conference</a>)          Senior Lecturer in Organic and Computational Chemistry, BSc / PhD Department of Chemistry, University of Leicester, Leicester LE1 7RH, UK</p>	Grand Conference Hall (Guest house)
13:30-14:00	<p><b>Molecular Modeling Computer Based Drug Design Virtual Screening, Synthesis and Anti-HCV Gynotype-4 Testing of Various New molecules Having Potential HCV Polymerase and HCV protease Inhibitor Activities</b>  <b>Mohamed Abdel Hamid Ismail (PhD)</b>          Professor of pharmaceutical chemistry &amp; Former Dean of Faculty of Pharmacy Ain-Shams University, Cairo, Egypt</p>	Grand Conference Hall (Guest house)
14:00-14:30	<p><b>Biomimetic Sensors based on MIP: Applications to Potentiometric Transduction.</b>  <b>Dr. Ayman Helmy Kamel</b>          Associate Prof. of Analytical Chemistry, Department of Chemistry, Faculty of Science, Ain Shams University, 11566 Abbassia, Cairo, Egypt</p>	Grand Conference Hall (Guest house)



<b>14:30-15:00</b>	<b>MOLECULAR IMPRINTED POLYMERS AND THEIR USAGE IN THE IMPROVEMENTS OF DRUG DELIVERY SYSTEMS</b> <b>Dr. Aliaa Shawky El-Tantawy</b> 1 <sup>st</sup> . rank position) in QC Department, Raw Materials sector in the National Organization for Drug Control and Research (NODCAR)	<b>Grand Conference Hall (Guest house)</b>
<b>15:00-15:30</b>	<b>Some rare earth oxides nanocopomsites based on MIP as Free Radical Scavengers for Relief of Heat stressed-goats</b> <b>Samr H. Kassem</b> Biotechnology Dept., Animal Health Research Institute, (AHRI)	<b>Grand Conference Hall (Guest house)</b>
<b>15:30-16:00</b>	<b>Coffee Break</b>	<b>Reception</b>
<b>16:00-16:30</b>	<b>Application of an absorption and luminescence CCD camera-based detector to the field of molecularly imprinted polymers</b> <b>Prof. Ashraf Mohamed Abdul Atti</b> Professor of Analytical Chemistry, Chemistry Department, Faculty of Science, Ain Shams University, Abbassia 11566, Cairo, Egypt.	<b>Grand Conference Hall (Guest house)</b>
<b>16:30-17:00</b>	<b>Robust Synthesized and Functionalized TAT- Gold Nanorods for Biomedical Applications</b> <b>Dina Salah El-Din Mohamed</b> Assistant lecturer Biophysics Group, Physics Department, Faculty of science, Dina Salah El-Din Mohamed Ain shams university	<b>Grand Conference Hall (Guest house)</b>





17:00-18:00	Lunch	Main Restaurant
<b>Wednesday 29 April, 2015</b>		
<b>Chairs</b>	<b>Dr. Assem Abolmaaty Sayed Ahmed</b> Director of TICO: Technology Innovation Commercialization Office, <b>Prof. Kenneth Shea,</b> University of California, Irvine, USA <b>Dr. Hossam E. M. Sayour</b> Associate Professor of Bioanalytical Chemistry, Biomedical Chemistry unit, Chemistry Dept., Animal Health Research Institute (AHRI)	
<b>9:00-9:30</b>	<b>Membrane and Wetlands Technologies for Water and Wastewater Management in Sinai</b> <b>Prof. Hussien Abdull Shafi</b> Water & Wastewater Research, Technology & Pollution Control Department, National Research Center (NRC)	<b>Grand Conference Hall (Guest house)</b>
<b>9:30-10:00</b>	<b>Photosensitized generation of singlet oxygen, environmental and medical implications</b> <b>Prof. Ayman A. Abdel-Shafi</b> Professor of Inorganic Chemistry, Department of Chemistry, Faculty of Science Ain Shams University, Abbassia, 11566, Cairo, Egypt	<b>Grand Conference Hall (Guest house)</b>
<b>10:00-10:45</b>	<b>Criteria for Selecting Experimental Laboratory Animals.</b> <b>Prof. Ahmed Tawfeek Soliman (Plen. talk)</b> President of Egyptian Society of Lab Animals <a href="http://www.vacsera.com/index.php/products/lab-animals">http://www.vacsera.com/index.php/products/lab-animals</a>	<b>Grand Conference Hall (Guest house)</b>
<b>10:45-11:15</b>	<b>Brucella Epitopes of Diagnostic Potential.</b> <b>Dr. Ashraf Sayour</b> Researcher & Technical Manager of Brucella Dept., Animal Health Research Institute (AHRI)	<b>Grand Conference Hall (Guest house)</b>



<b>11:15-11:45</b>	<b>Evaluation of the inhibitory potential of neutralized bee venom fraction(s) on highly pathogenic avian influenza (H5N1) using abiotic polymer nanogels</b> <b>Dina Osama Sharawy</b> Virology unit, National Laboratory of Poultry Quality Control, Animal Health Research Institute (AHRI)	<b>Grand Conference Hall (Guest house)</b>
<b>12:00-12:30</b>	<b>Coffee Break</b>	<b>Reception</b>
<b>Chairs</b>	<b>Dr. Assem Abolmaaty Sayed Ahmed</b> Director of TICO: Technology Innovation Commercialization Office, <b>Prof. Kenneth Shea,</b> University of California, Irvine, USA <b>Dr. Hossam E. M. Sayour</b> Associate Professor of Bioanalytical Chemistry, Biomedical Chemistry unit, Chemistry Dept., Animal Health Research Institute (AHRI)	
<b>12:30-13.15</b>	<b>MIP capture phases for bio- analysis and discovery</b> <b>Prof. Böre Sellergren (Plen talk via video conference)</b> Biofilms Research Center for Biointerfaces Department of Biomedical Science, Faculty of Health and Science, Malmö University Malmö högskola, Hälsa och samhälle, 205 06 Malmö, Sweden	<b>Grand Conference Hall (Guest house)</b>
<b>13:15-14:00</b>	<b>Hierarchical Molecularly Imprinted Architectures: Rational Design and Application of Biomimetic Materials</b> <b>Prof. Ian Nicholas Invited talk (Plen. talk via video conference)</b> Bioorganic & Biophysical Chemistry Laboratory, Linnaeus University Centre for Biomaterials Chemistry, Linnaeus University, SE-391 82 Kalmar, Sweden, Department of Chemistry, BMC, Uppsala University, SE-751 23 Uppsala, Sweden	<b>Grand Conference Hall (Guest house)</b>



<b>14:00-14:15</b>	<b>Coffee Break</b>	<b>Reception</b>
<b>14:30-15:00</b>	<p><b>Improvement of Antimicrobial Action of Silver Nanoparticles using Bacterial Templated Polymers and Toxicity Evaluation of Silver Nanoparticles</b></p> <p><b>Dina Ahmed Mosselhy (invited talk via video conference)</b></p> <p>Veterinarian, M.V.Sc., Fish Diseases Research Department. Animal Health Research Institute (AHRI), Giza, Egypt.</p> <p>Visiting PhD candidate, in School of Chemical Technology, Aalto University, Finland</p>	<b>Grand Conference Hall (Guest house)</b>
<b>15:00-16:00</b>	<p><b>Closing ceremony</b></p> <p><b>Dr. Assem Abolmaaty Sayed Ahmed</b> Director of TICO: Technology Innovation Commercialization Office,</p> <p><b>Prof. Kenneth Shea,</b> University of California, Irvine, USA</p> <p><b>Dr. Hossam E. M. Sayour</b> Associate Professor of Bioanalytical Chemistry, Biomedical Chemistry unit, Chemistry Dept., Animal Health Research Institute (AHRI)</p>	<b>Grand Conference Hall (Guest house)</b>
<b>17:30-18:30</b>	<b>Lunch</b>	<b>Main Restaurant</b>





## The 4th Scientific Conference of Ain Shams University Towards a National Innovation System Current Indicators & Future Prospects



**From 27th to 29th April 2015**  
**Venue: Grand Conference Hall**  
**Faculty of Pharmacy-Ain Shams University**

A new phase in Egypt has started formed by the forces of change among which is the growing trend towards globalization, new economy, green economy, as well as the acceleration of world competitive powers, and the emergence of “sustainability of the competitive advantage” concept which applies to developmental institutions especially the national system for higher education and research. For such a system to be recognized as distinguished and competitive, the need emerges to conduct all conclusive reformational and developmental operations to strengthen its cooperation with active categories in society on one part, and achieve higher levels of national development on another.

No society is capable of reaching the goals of a comprehensive, sustainable development, and facing the demands of the future except with knowledge, technological development and innovation, through channeled academic research, which is considered in any society the cornerstone to academic progress and development. Therefore, advanced countries strove to increase their support of academic research and its development. Methods and multiple forms were founded to achieve the utmost avail of academic research in its various types with special attention to the innovative, technological and industrial side. As a result, there emerges an escalation in endowing chaired positions in advanced and future sciences, expanding the



establishment of research and technology parks, incubators, centers for innovation and excellence, the valleys of research and development, all are efforts aiming at initiating fertile domains for innovation. importance of effecting more interconnection and integration among the functions and activities of science and technology institutions, along with creativity

The aforementioned institutions include governmental bodies, scientific councils, funding establishments, universities, special research foundations, and technology-built industries. Although these institutions vary in policies, goals, and special programs, they need within the national system for innovation to be unified by a comprehensive discipline which targets them toward achieving common social and economic goals.

The national system for innovation proposes a comprehensive vision as per the connectivity between scientific activity and economic performance. It represents a relatively new entity in Egypt. Therefore, a need arises to truly understand what forms this system? How does it function? How can a move from the system of science and technology to the national system for innovation be effected in light of the turn to a new economy via: understanding the structure and performance of scientific institutions in Egypt, the analysis of the national systems for innovations to their basic elements, specifying the role of each element within the frame of the study system performance? Moreover, the factors governing building these systems will be defined, as well as the mechanics according to which a relatively independent institution is creatively self-organizing, thus achieving a set of common goals.

Within this context ASU proposes through its conference varied visions to help build the National Innovation System which holds together education, scientific research, and industry to support the local development of the nation and build a future for generations to come. The NIS includes mechanics to draw a technological standards of performance, means of cooperation, and strategies for development through research groups in both sectors of education and scientific research. It sets the goal to achieve an infrastructure of state-run scientific research connected with industry, serves the local market needs and the state developmental plans. In consequence it allocates the required investments for advancing science and technology in the country.

### **This conference aims to achieve the following:**

- 1- Providing an evaluational frame for the national march of higher education, academic research, technological development, and innovation from 2000 to 2015.
- 2- Depicting the features of the national system for higher education and academic research in light of the basics of new economy
- 3- Presenting initiatives to build scientific and technological capacities nationally, regionally, and internationally
- 4- Outlooking the future of scientific and technological specializations and the expansions of the demands made by high-priority developmental sectors.



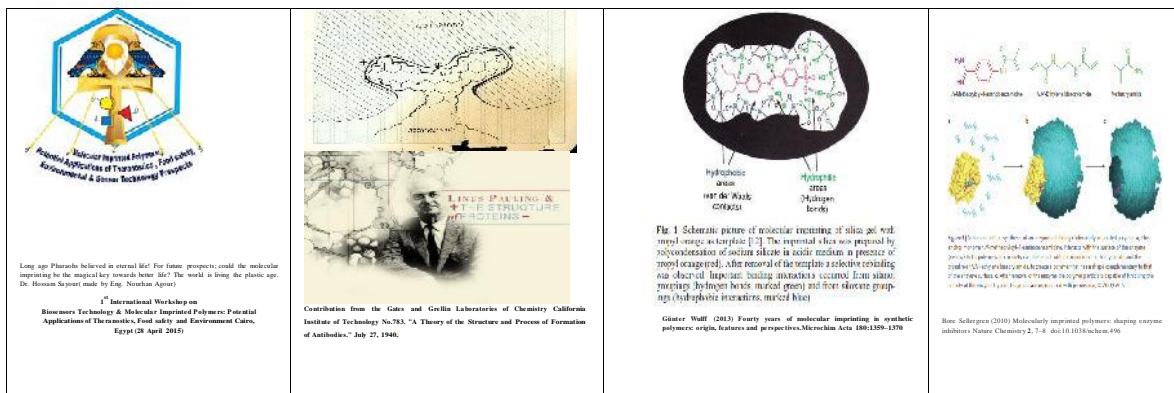
- 5- Proposing visions as per the 'know how' of transforming Egyptian universities into research, and entrepreneurial universities.
- 6- Acknowledging the mechanics of reinforcing national capacities to promote higher education, developmental technology and innovation.
- 7- Identifying the prime factors affecting the innovative environment in higher education and research institutions.
- 8- Understanding the dynamics according to which national innovation systems function, in terms of interconnecting the national establishments for innovation with an inseparable bond.
- 9- Defining introductions, foundations, standards, and modern general directives to structure and develop the national system for innovation in conformity with its dynamic nature.
- 10- Proposing a scientific and technological cooperation strategy among Arab states, Africa, and the world.
- 11- Demonstrating the topmost expertise, regionally and globally, in the field of structuring and developing national systems for innovation, and considering benefits befitting the Egyptian case encompassing both its conditions and ambitions.

### Suggested Topics:

- Advanced and modern industries:
- Intensive hi-tech industries, i.e. information and communication industries, bioengineering, renewable energy, environmental, and pharmaceutical industries, chemical industries, etc.
- **Advanced technology, new materials, and applications of biotechnology.**
- Atomic energy and its peaceful applications.
- Radiation technology, and radioactive contamination.
- **Nanotechnology, biotechnology, and microelectronics.**
- New and renewable energy.
- **Nanotechnology**
- Environmental causes concerned with the preservation of biological resources, environmental pollution, sustainable development, green economy, the influence of climatic changes on water, agriculture, health, wetlands, fisheries, and beaches.
- Applications of environment-friendly new technologies.
- Development, utilization and investment of saltwater/freshwater fisheries.
- Maritime techniques.
- Future of transport sector.
- Pedagogical, educational and academic innovation
- **Medical care.**
- Life sciences
- Safety and security information
- Space sciences, astronomy, and geology.







In the recent years, imprinted polymers have been used to capture/recognize everything from macromolecules to inorganic ions. Recognition plays an important role in biological systems and is observed in between receptor- ligand, antigen-antibody, DNA-protein, sugar-lectin, RNA-ribosome, substrate-enzyme etc.

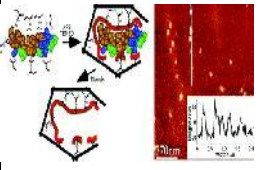
Long ago Pharaohs believed in eternal life! For future prospects; could the molecular imprinting be the magical key towards better life? The world is living the plastic age. The answer is definitely yes. MIP's would offer smart solutions in the fields of theranostics, food safety, environmental and sensor technology. Molecular Imprinted Polymers (MIPs) have been applied as artificial antibodies, catalysts, sensors, drug assay & delivery tools, and chromatographic separations. Finally, MIP is science goes market upon business analysis based on patents.

**Dr Miruna Petcu from the Waikato Institute of Technology, Wintec, explains MIP science using a simple analogy.** "Think of a polymer like a lock and a key - only one key will open one house. We design the polymer as the [lock] for the particle you want to remove," Petcu says.

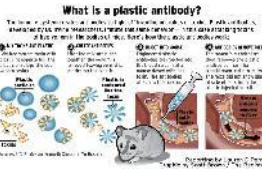
**Professor Sergey asked also a good question:** "Can synthetic receptors replace monoclonal antibodies in diagnostic and in vivo applications?"

**Prof. Shea** who is one of our workshop' chair guests will tell us who imprinting will be an alternative to lock and the key paradigm in his talk entitled: **Adaptable "Synthetic Polymers as Protein and Peptide Affinity Ligands. An Alternative to the Lock and Key Paradigm"**

For the first time in Egypt, an International Workshop on Biosensors Technology & Molecular Imprinted Polymers: Potential Applications of Theranostics, Food safety and Environment will be launched by a multidisciplinary cohesive research team ever exists in the fields of disease diagnosis, public health, bioanalytical chemistry, electrical and communication engineering

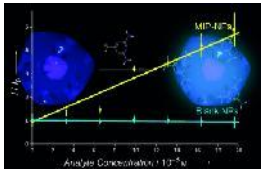


**2008 -2012 Kenneth Shea and Yu Hoshino**  
1<sup>st</sup>. In-vivo plastic antidote :  
"Peptide Imprinted Polymer Nanoparticles: A Plastic Antibody"  
**Yu Hoshino , Takashi Kodama , Yoshi Okihata and Kenneth J. Shea** (2008) J. Am. Chem. Soc., 2008, 130 (46), pp 15242–15243. DOI: 10.1021/ja8062875

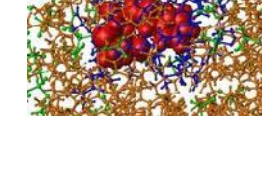


**What is a plastic antibody?**  
The term 'plastic antibody' refers to a synthetic polymer that mimics the structure and function of a natural antibody. It is designed to bind to a specific target molecule, such as a protein or a small molecule, and to act as a catalyst or a sensor. The plastic antibody is made of a polymer chain that has been imprinted with the shape of the target molecule. This allows the plastic antibody to recognize and bind to the target molecule with high specificity and affinity. The plastic antibody can be used in a variety of applications, including drug delivery, diagnostics, and catalysis.

**Kenneth Shea and Yu Hoshino**



**Building blocks for a bright future:** A new method for the synthesis of organic nanoparticles (NPs) was developed combining a molecularly imprinted polymer shell and a fluorescent dendrimer biosensing core. Cubic organic nanoparticles are reported for the first time. The polymeric nanoparticles could be used as a direct replacement for antibodies in biosensor applications.  
**Piletsky's School**  
*Angewandte Chemie International Edition* **Volume 51, Issue 21**, pages 5190–5199, May 21, 2012



A typical "box" generated in a Molecular Dynamics experiment. The template is highlighted in red surrounded by monomer (blue), cross-linker (green) and solvent (brown). **Dr. Kal Karim**



The workshop infers theranostics, (biosensors and biomemetic sensors), Wireless Sensors Networks (WSN's), Micro Total Analysis Systems ( $\mu$ TAS), Lab-on-a chip (LOC) is based on smart materials; smart polymers as artificial molecular recognizers or nanocrystals semiconductors quantum dots for bio labeling as well as devices (PDMS Chip assay for immuno-PCR appliances film based on the measurement of antibodies (Microfluidic Inverse Phase ELISA) and vital similarities.

**The objectives of this workshop can be summarized as follows:**

Awareness of potential MIP technology applications as unique technology prototypes that would meet the market need upon business analysis. This workshop would create an outstanding catalyst for multidisciplinary projects, partnerships, and joint ventures which would enrich collaborative research, and innovation for NEW era of future sciences. This would also enhance technology synergies among different group of researchers and industry, and therefore bring funds for technology incubators.

#### Workshop outlines:

- 1) Rational design -Preparation and characterization of synthetic polymeric nanoparticles /core-shell nanocomposites for theranostic (biomedical applications)
- 2) State of art MIP based sensors for quality control/quality assurance on-site monitoring (Point of care devices; LOC- Wireless Sensors Networks; WSN's, Bio-MEMS)
- 3) Antibody mimics "plastic antibody" for MIP-based immunoassays





## Workshop committee:

- Chair. Dr. Assem Abolmaaty Sayed Ahmed, Director of International Collaboration, Technology Innovation Commercialization Office, Vice Director of Microbial Resource Center (Cairo MERCIN), Adj. Assist. Professor, Food Science and Human Nutrition, Michigan State Univ., East Lansing, MI, USA and Adj. Assist. Professor, Mechanical Engineering/College of the Environment and Life Sciences, Univ. of Rhode Island, Kingston, RI, USA.
- Honr. Chair, Professor Saad S. M. Hassan, D.Sc. Prof. Analytical Chemistry, Former Dean, Faculty of Science, Ain Shams, University.
- Chair guest , Prof. Kenneath Shea, Department of Chemistry, School of Physical Sciences Distinguished Teaching Award NIH , University of California
- Executive Chair, Dr. Hossam E. M. Sayour, Associate Prof. of Bioanalytical Chemistry, Biomedical Chemistry unit, Chemistry and Nutritional Deficiency Disorders Dept., Animal Health Research Institute.(main contact person)
- Executive Chair, Dr. Ayman Helmy Kamel, Associate Prof. of Analytical Chemistry, Chemistry Dept., Faculty of Science Ain Shams University



**Dr. Assem Abomaaty Prof. Saad Hassan Prof. Kenneth Shea Dr. Hossam Sayour Dr. Ayman Kamel**



## Workshop board:

1. **Dr. Assem Abolmaaty Sayed Ahmed**, Director of International Collaboration, Technology Innovation Commercialization Office, Vice Director of Microbial Resource Center (Cairo MERCIN), Adj. Assist. Professor, Food Science and Human Nutrition, Michigan State Univ., East Lansing, MI, USA and Adj. Assist. Professor, Mechanical Engineering/College of the Environment and Life Sciences, Univ. of Rhode Island, Kingston, RI, USA.
2. **Professor Saad S. M. Hassan**, D.Sc. Prof. Analytical Chemistry, Former Dean, Faculty of Science, Ain Shams, University.
3. **Prof. Kenneath Shea**, Department of Chemistry, School of Physical Sciences **Distinguished Teaching Award NIH** , University of California
4. **Prof. Sergey Piletsky** Secretary-general, the International Union of Advanced Materials, Department of Chemistry, University of Leicester, Leicester LE1 7RH, UK.
5. **Prof. Böre Selligren** Biofilms Research Center for Biointerfaces Department of Biomedical Science, Faculty of Health and Science, Malmö University Malmö högskola, Hälsa och samhälle, 205 06 Malmö, Sweden.
6. **Prof. Ian Nicholas** Bioorganic & Biophysical Chemistry Laboratory, Linnaeus University Centre for Biomaterials Chemistry, Linnaeus University, SE-391 82 Kalmar, Sweden, Department of Chemistry, BMC, Uppsala University, SE-751 23 Uppsala, Sweden.
7. **Professor Hani Fikry Ragai** Faculty of Engineering, Electronics and Communications Department, Ain Shams University 1, Elsarayat St., Abassia, 11517, Cairo, Egypt.
8. **Prof. Mohamed Abdel Hamid Ismail (PhD)** Professor of pharmaceutical chemistry & Former Dean of Faculty of Pharmacy Ain-Shams University, Cairo, Egypt
9. **Ashraf Shams Eldin Yahia, Prof. of Electronics and Communication, Physics Dept., Faculty of Science**, Ain-Shams University, Cairo, Egypt
10. **Prof. Hussien Abdull Shafi** Water & Wastewater Research, Technology & Pollution Control Department, National Research Center.
11. **Prof. Ahmed Tawfeek Soliman** President of Egyptian Society of Lab. Animals



12. **Prof. Ayman A. Abdel- Shafi** Professor of Inorganic Chemistry, Department of Chemistry, Faculty of Science, Ain Shams University, Abbassia, 11566, Cairo, Egypt.
13. **Prof. Ashraf A. Mohamed** Professor of Analytical Chemistry and Director of Studies & Consultation Center Faculty of Science, Ain Shams University, Abbassia, Cairo-11566, Egypt.
14. **Dr. Kal Karim** Senior Lecturer in Organic and Computational Chemistry, BSc / PhD, Department of Chemistry, University of Leicester, Leicester LE1 7RH, UK.
15. **Dr. Ayman Helmy Kamel**, Associate Prof. of Analytical Chemistry, Chemistry Dept., Faculty of Science Ain Shams University.
16. **Dr. Ashraf Sayour** Researcher & Technical Manager of Brucella Dept., Animal Health Research Institute (AHRI).
17. **Dr. Hossam E. M. Sayour**, Associate Prof. of Bioanalytical Chemistry, Biomedical Chemistry unit, Chemistry and Nutritional Deficiency Disorders Dept., Animal Health Research Institute.
18. **Dr. Ihab Adly** Ph.D. in Electronics and Communications, Department, Faculty of Engineering, British University in Egypt (BUE)
19. **Dr. Aliaa Shawky El-Tantawy** 1<sup>st</sup>. rank position) in QC Department, Raw Materials sector in the National Organization for Drug Control and Research (NODCAR)
20. **Dalia Al-Masry** Lecturer Assiss National Laboratory of Poultry Quality Control, Animal Health Research Institute
21. **Samar Hamdy Kassem** Lecturer Assiss. Internal Medicine, Biotechnology Dept., Animal Health Research Institute
22. **Mira Al-Sayed Okasha** M.Sc. Biomedical Engineer
23. **Kareem Seliem** Virology unit, National Laboratory of Poultry Quality Control, Animal Health Research Institute
24. **Dina Salah El-Din Mohamed** Biophysics Group, Physics Department, Faculty of science, Ain shams university
25. **Ahmed Fawzy** Virology Dept., National Laboratory of Poultry Quality Control, Animal Health Research Institute.
26. **Dina Ahmed Mosselhy** Veterinarian, M.V.Sc., Fish Diseases Research Department. Animal Health Research Institute, Agriculture Research Center, Giza, Egypt.



Visiting PhD candidate, in School of Chemical Technology, Aalto University, Finland

**27.Dina Osama Sharawy** Virology unit, National Laboratory of Poultry Quality Control, Animal Health Research Institute