



Citations of the PAS Foreign Fellows Elected in 2016 and 2017

The following eminent scientists were elected Foreign Fellows of the Pakistan Academy of Sciences during 2016.

Professor Dr. David Lee Smith

Professor David Lee Smith is a leading researcher in the field of mass spectrometry and its use for a broad range of applications. In the earliest stage of his research career (years 1965-1975), he designed and constructed specialized mass spectrometers for studies of gas phase ion-molecule reactions. Drs. Jean Futrell and Marvin Vestal, two widely recognized leaders in the field of mass spectrometry fundamentals, were his mentors during this period. In the next stage of his research career (years 1976-1984), his research shifted to applications of mass spectrometry to identify modified forms of nucleic acids. During this time, he developed high sensitivity methods for exact mass measurements, chemical derivatization, advanced instrumentation for field desorption ionization, and GC MS interfaces optimized for highly polar compounds.

In 1984 he moved from the University of Utah to Purdue University where he developed new methods for analyzing biomaterials. Major research areas included structure elucidation of proteins and natural products, development of stable isotope tracer methodology for calcium and magnesium, and initial development of methods for studying the folded structures of proteins. Many of his protein structure studies focused on the causes of cataract. During this period he was also Director of the Purdue University School of Pharmacy Mass Spectrometry Laboratory.

In 1994, he was appointed Director of the Nebraska Center for Mass Spectrometry where research on the causes of cataract, the structures of proteins and calcium tracer methods continued. Areas of emphasis included protein folding, protein-protein interactions, the structures of large complexes (e.g., chaperonins and viral particles) and proteomics. His contributions to the development

of amide hydrogen exchange mass spectrometry to study the folded structures of proteins are widely recognized.

Professor Smith has worked with Pakistani scientists for over 3 decades. Initial visits were directed to advancing mass spectrometry services at the HEJ Research Institute of Chemistry at the University of Karachi. He later received grants from the National Science Foundation (USA) to support Protein Structure symposia and to support visits to the US by Pakistani students and faculty. He worked through the US Department of Commerce to have sanctions removed from several Pakistani Universities. More recently, he has been traveling to Pakistan every year to teach a 2-credit graduate level course in mass spectrometry.

Professor Dr. Jinde Cao

Professor Jinde Cao is an Endowed Chair Professor, the Dean of School of Mathematics and the Director of the Research Center for Complex Systems and Network Sciences at Southeast University, and the Director of The Jiangsu Provincial Key Laboratory of Networked Collective Intelligence, China. He received Ph.D. degree from Sichuan University, Chengdu, China in Mathematics/Applied Mathematics in 1998. From March 1989 to May 2000, he was with the Yunnan University. In May 2000, he joined the School of Mathematics, Southeast University, Nanjing, China. From July 2001 to June 2002, he was a Postdoctoral Research Fellow at the Department of Automation and Computer-Aided Engineering, Chinese University of Hong Kong, Hong Kong.

Professor Cao has made fundamental contributions to the mathematical theory and applications of neural networks, neurodynamic systems and complex dynamical networks. He has been selected as Member of Academia Europaea (Academy of Europe), IEEE Fellow, and Foreign Fellow of Pakistan Academy of Sciences. He has been named as Highly Cited Researcher in

Mathematics, Computer Science, and Engineering by Thomson Reuters/Clarivate Analytics. He is the top-one author of 20 most-cited authors on the topic of artificial neural networks (<http://esi-topics.com/art-neu-net/>) during 1997-2007 with two papers listed in the 20 most-cited papers. His works are widely recognized, and are written into the annual report of the National Natural Science Foundation of China as one of 15 excellent funded projects, and has more than 25539 citations with H-index of 86 according to ISI-Web of Science (35014 citations with H-index of 100 according to Google Scholar). He has received, among others, National Innovation Award of China, Thomson Reuters Research Fronts Award, Thomson Reuters China Citation Laureates Award, first class Science and Technology Award by Jiangsu Province of China, and second class Natural Science Award by Ministry of Education of China.

Professor Cao was an Associate Editor of the IEEE Transactions on Neural Networks, Neurocomputing, and Differential Equations and Dynamical Systems. He is currently an Associate Editor of the IEEE Transactions on Cybernetics, IEEE Transactions on Cognitive and Developmental Systems, Neural Networks, Nonlinear Analysis: Modelling and Control, Mathematics and Computers in Simulation, Advances in Difference Equations, Journal of the Franklin Institute, Cognitive Neurodynamics and Journal of Artificial Intelligence and Soft Computing Research. He is also a Discipline Editor of Proceedings of the Pakistan Academy of Sciences, Series A. As lead guest editor, he organized 6 special issues for ISI journals.

Professor Dr. Bernd Michael Rode

The scientific profile of Professor Bernd Michael Rode is characterized by a rapid career, leading to full professorship at the age of 33, followed by numerous invitations as guest professor in

European and Asian countries. Professor Rode has gained international recognition in two research areas, his main field being theoretical methods for the investigation of liquid systems, and the second research area of chemical evolution of amino acids, peptides and proteins leading to the origin of life. International anonymous peer reviews of research proposals have repeatedly attributed him world leadership. This qualification is confirmed by a large number of invited articles in top journals and invited plenary and session lectures at international conferences, in both of his research fields. The applicant has successfully built up research groups in computational chemistry in other countries and many of his 74 Ph.D. graduates have gained top positions in academia and industry worldwide. He has also served as president and vice-president of United Nations Commission on Science and Technology for Development (UNCSTD) for almost 10 years and received many honours, including 4 honorary doctorate degrees and numerous state decorations up to the top level. Honorary memberships in a chemical and a pharmaceutical society and numerous leading functions in academic and governmental bodies show the universality of his profile.

Around 500 publications in international journals and numerous contributions to specialised books demonstrate the research productivity of Prof. Rod; also, he has organised or co-organised a number of international conferences. The foundation and continuous amplification of a European-Asian University Network (ASEA-UNINET) also belongs to his international activities and has co-determined his international leadership profile both in scientific and organisational matters.

After retiring from the University, Prof. Rode has continued working as honorary president of ASEA-UNINET and as chemical consultant for industrial enterprises developing new consumer products.

The following eminent scientist was elected Foreign Fellow of the Pakistan Academy of Sciences during 2017.

Professor Dr. Samar Hasnain

Professor Samar Hasnain is a structural biologist with over 40 years of Synchrotron Radiation experience. He obtained his BSc Honours and MSc in Physics from the University of Karachi and was a Lecturer in Physics and then in Applied Physics at Karachi from 1972-1974. He was awarded the J R Ashworth Research Scholarship in 1974 from the University of Manchester where he completed his PhD in experimental Physics in 1976, working on the first-generation synchrotron source NINA with the SR pioneers of the UK. His PhD was on molecular crystals using synchrotron radiation. After spending a year as PDRA with Manchester he joined DESY in Hamburg as a DESY Fellow working on the Storage Ring based Synchrotron Radiation Facility, HASYLAB. In October 1978, he took a conscious decision to use his Physics and Synchrotron background at the interface of Chemistry and biomedical science and joined the UK's first biological XAFS project working on metallo-enzymes and biological calcification.

In 1979, Prof. Hasnain joined the UK's effort of establishing the world's first dedicated synchrotron radiation source (SRS) as a full time scientific staff

member of the Daresbury National Laboratory. In 1989, he established the Molecular Biophysics group at Daresbury where he remained its head until March 2008 when he moved to the University of Liverpool as Max Perutz Professor of Molecular Biophysics where he established the Barkla X-ray Laboratory of Biophysics. During 2011-2105 he was the International Lead for the Faculty of Health and Life Sciences of the University. He is co-Director of Barkla X-ray laboratory of Biophysics.

His main interest is in structure-function studies of proteins and their complexes that are involved in biological electron transfer, nitrogen cycles and neurodegenerative diseases. He has been involved in structure-based drug discovery targeted towards neurodegenerative diseases and malaria.

Prof. Hasnain is the UK Government's representative on the SESAME Council since 2004 and was the Inaugural Chair of the Beamline Advisory committee for 9 years since 2006. He has been appointed Chair of Proposal Review Committee for SESAME in 2016.

Prof. Hasnain is the founding Editor of the IUCr's Journal of Synchrotron Radiation (1993). Since 2012, he is the Editor-in-Chief of the IUCr Journals. In 2014, he launched the IUCr's flagship journal IUCrJ. He is also an Editor of the Current Opinion in Structural Biology.