IEEE NUCLEAR AND PLASMA SCIENCES SOCIETY
PLASMA SCIENCE AND APPLICATIONS EXECUTIVE COMMITTEE ELECTION
For a Three-Year Term 1 January 2027 – 31 December 2029
(VOTE FOR NO MORE THAN FIVE)

FARHAT BEG (M'98-SM'09-F'12) holds the Shao-Chi and Lily Lin Chancellor's Endowed Chair in Engineering Science in UC San Diego's Department of Mechanical and Aerospace Engineering. His research concentrates on laser-plasma interactions, pulsed-power-driven X- and Z-pinches, and inertial fusion energy. He has published over 300 refereed papers including in *Nature*, *Nature Physics*, *Nature Photonics* and *Physical Review Letter* with > 10, 000 citations and an H-index of 52 (Web of Science). He is the Fellow of the IEEE, American Physical Society, and the American Association for the Advancement of Science. He is recipient of the Department of Junior Faculty Award (2005), IEEE Early Career Award (2008), and the IEEE Plasma Science and Applications Committee (PSAC) Award (2021).

He has served IEEE in various leadership capacities; General Chair of the International Conference on Plasma Science (ICOPS) 2009; Treasurer of ICOPS 2022 (Seattle); Senior Editor for *IEEE Transactions on Plasma Science*; past member of the Plasma Science and Applications Committee. He is the Technical Program Chair of ICOPS 2029 (San Diego).

STEVEN EXELBY (GSM'17-M'19) Senior Research Physicist, Air Force Research Laboratory. Dr. Steven Exelby is a senior research physicist specializing in high power microwave based directed energy technologies, currently serving at the Air Force Research Laboratory (AFRL). His work centers on the development and test of advanced microwave systems, supporting national defense initiatives through hands-on experimental research, numerical simulation, and technical partnerships.

Dr. Exelby began his academic career at the University of Michigan, where he earned a Bachelor of Science in Physics in 2013. He remained at the university to complete his Ph.D., focusing his doctoral research on high power microwave sources. Specifically, his work investigated the physics, design, and experimental performance of a novel crossed-field amplifier. This rigorous academic training provided a comprehensive background in the complexities of microwave generation and the practical challenges of operating high-power electromagnetic systems.

Upon completing his doctorate, Dr. Exelby transitioned to his current role at AFRL. His primary focus is on researching novel HPM sources, critical system components, and advanced materials. Dr. Exelby's approach is predominantly experimental, relying on physical testing and laboratory evaluation. This experimental foundation is actively supported by numerical simulation to model complex electromagnetic interactions and validate test results. Furthermore Dr. Exelby manages the Sources Laboratory and is responsible for overseeing the facility's daily operations. He ensures the laboratory is equipped, maintained, and safely operated to support the varied experimental needs and rigorous testing demands of AFRL's directed energy projects.

To advance the state of HPM technology, Dr. Exelby maintains collaborative relationships with a broad network of partners across academic institutions, industrial organizations, and other research laboratories. These partnerships help integrate broader scientific findings into practical defense applications. Alongside his research and management duties, Dr. Exelby is actively engaged in mentoring students in the field of directed energy. By sharing his experimental expertise and providing guidance in the laboratory environment, he supports the development of future scientists and engineers entering the defense research sector.

TANVIR FAROUK (GSM'07-M'09) is a Professor in the Department of Mechanical Engineering at the University of South Carolina and an internationally recognized researcher in plasma science and engineering, advanced manufacturing, multiphase transport phenomena, and energy systems. He earned his MASc in Mechanical Engineering from the University of Toronto in 2004 and his PhD from Drexel University in 2009. His doctoral research on non-thermal plasma discharges was recognized with the prestigious Natural Sciences and Engineering Research Council of Canada (NSERC) Postdoctoral Fellowship, reflecting the early impact of his contributions to plasma science.

Dr. Farouk's research focuses on understanding and harnessing plasma-assisted processes for applications spanning advanced materials synthesis, plasma-enabled manufacturing, environmental remediation, energy conversion, and sustainable technologies. By integrating experimental diagnostics, computational modeling, and high-performance computing, his work has advanced the fundamental understanding of plasma-material interactions and enabled the development of practical engineering solutions. He has made pioneering contributions to the study of fast plasma switches, circuit-driven plasma instabilities, self-organized plasma patterns (striations), and plasma discharges in liquid media, helping establish new directions in low temperature plasma research.

Throughout his career, Dr. Farouk has led numerous multidisciplinary research programs supported by federal agencies and industrial partners. His work has resulted in a substantial body of highly cited publications and multiple patents related to plasma-assisted manufacturing, materials processing, and energy applications. His innovations have helped bridge the gap between fundamental plasma science and industrial implementation, demonstrating the transformative potential of plasma technologies in manufacturing, sustainability, and environmental stewardship.

Dr. Farouk has maintained an active leadership role within the broader plasma science community. He is a long-standing member of the American Physical Society (APS) and an active participant in the APS Division of Plasma Physics, contributing to scientific exchange and interdisciplinary collaboration across plasma-related disciplines. He has also been deeply involved with the Gaseous Electronics Conference (GEC), one of the premier international forums for low-temperature plasma science and engineering. Through invited presentations, technical contributions, mentoring activities, and collaborations with researchers from academia, industry, and national laboratories, he has helped advance the understanding and application of gaseous electronics and plasma-based technologies.

In addition to his research accomplishments, Dr. Farouk has served the scientific community through conference organization, peer review, mentorship, and professional service. He has advised numerous graduate students, postdoctoral researchers, and early-career scientists, many of whom have gone on to successful careers in academia, industry, and government laboratories. As a nominee for the IEEE Plasma Science and Applications Committee (PSAC), Dr. Farouk brings extensive experience in both fundamental plasma research and technology development and is committed to strengthening the impact, visibility, and societal relevance of plasma science and its applications.

YANGYANG FU (M'15-SM'20) received the Ph.D. degree in electrical engineering from Tsinghua University, Beijing, China, in 2015. He was a Post-Doctoral Researcher with the Department of Computational Mathematics Science and Engineering, Michigan State University, East Lansing, MI, USA. He was an Assistant Professor with the Department of Electrical Engineering, Tsinghua University, in 2021. He is currently an Associate Professor with the Department of Electrical Engineering, Tsinghua University and the Associate Director of the High Voltage and Insulation Research Institute. In 2024, he was appointed Director of the Gas Discharge and Plasma Laboratory with the Department. His current research interests include microdischarges, electrical breakdown, radio frequency plasmas, laser-sustained plasma sources, plasma simulation, and low-temperature plasma applications. Dr. Fu has authored or co-authored one book, more than 100 refereed journal papers, including Physical Review Letters (2) and Applied Physics Letters (11), and more than 130 conference proceedings, including 2 Plenary Talks and more than 30 invited talks at conferences.

Prof. Fu was a Committee Member of the IEEE ICOPS and APS GEC Outstanding Student Paper Award. He was a recipient of the Excellent Dissertation Award (First Place), the Academic Star Award, the Excellent Graduate Award from Tsinghua University, the National Scholarship Awarded by the Ministry of Education of the People's Republic of China, and the Outstanding Student Paper Award (First Place) from the 42nd IEEE International Conference on Plasma Science in 2015. He received the IEEE Nuclear and Plasma Science Society (NPSS) Early Achievement Award in 2024. He is currently an Associate Editor of the *High Voltage*, and Guest Editor of *Frontiers in Physics* and *IEEE Transactions on Plasma Science*. He serves as a frequent reviewer for a number of plasma and applied physics journals, including the *Plasma Sources Science and Technology*, *Plasma Science Technology*, *Physics of Plasmas*, *IEEE Transactions on Plasma Science*, and *Applied Physics Letters*. He received the Outstanding Reviewer Award for *Plasma Sources Science and Technology* from the Institute of Physics in 2017, 2019, and 2022.

RAJDEEP SINGH RAWAT (M'11) received his PhD in Physics, specializing in experimental plasma physics, from the University of Delhi, India, in 1994. After serving at the University of Delhi for about eight years, he joined **Nanyang Technological University (NTU), Singapore**, in 2000, where he is currently Professor of Physics in the Natural Sciences and Science Education Department. His research spans interdisciplinary areas of plasma sources, pulsed power, plasma diagnostics, and plasma-assisted applications, including thermal barrier coatings, tribological coatings, fusion first-wall materials, and electrode materials for energy storage and conversion devices. Since joining NTU, he has participated in **56 research grants** totaling more than S$30 million, serving as principal investigator on over 35 projects. He **has supervised about 20 PhD students** and currently supervises 4 PhD students. He has published more than 300 journal papers and over 75 conference proceeding papers, attracting more than 11,000 citations with an h-index of 55. He holds five patents and has filed three additional technology disclosures. He has delivered **38 plenary or keynote lectures and more than 75 invited talks** at international conferences.

Rajdeep is currently serving a two-year term as Chair of the Division of Plasma Physics of the Association of Asia Pacific Physical Societies (AAPPS-DPP), which has more than 3,800 members. He previously served as Chair-Elect for 2023-2024, is a founding member of AAPPSDPP, Chair of Plasma Innovation Prize and has served continuously on its Board of Directors for more than eight years. He has also served on the AAPPS Council since 2017 for the maximum permitted nine years and chaired the prestigious C. N. Yang Award Selection Committee for three years. Since 2012, he has been President of the Asian African Association for Plasma Training (AAAPT), comprising 57 member institutions across 23 countries and organizing the annual International Conference on Plasma Science and Applications (ICPSA).

Among his most distinguished professional appointments is as President of the International Physics Olympiad (IPhO), the world's premier physics competition for high-school students. He is only the third elected President of IPhO and the first from Asia in its more than 50-year history. The IPhO is hosted annually by different countries and attracts participation from over 85 nations and about 1,000 participants in various capacities.

Rajdeep also serves as **Associate Editor of Reviews of Modern Plasma Physics (Springer)**, and as Editorial Board Member of Plasma Science and Technology (IOP), Journal of Theoretical and Applied Physics (Springer), and The Physics Educator (World Scientific).

For IEEE NPSS PSAC, he chaired the 47th IEEE International Conference on Plasma Science, ICOPS 2020, hosted from Singapore online during Covid, with about 740 registered participants, served on the PSAC Executive Committee for 2022-2025, and has almost regularly participated in ICOPS and PPC since 2003, missing only the few. He has also chaired several other major international conferences, including two AAPPS-DPP Asia-Pacific Conference on Plasma Physics (600-1000 participants) and 7 ICPSA series of conferences, strengthening regional scientific exchange and advancing sustained plasma physics collaboration across Asia-Pacific and international research communities globally.