ASET Colloquium

Capturing Transient Species in Ionized Liquid Water and Aqueous Solutions

Prof. Zhi Heng Loh

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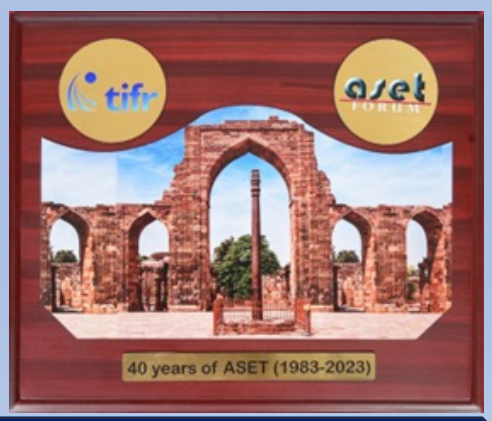
The ionization of liquid water serves as the principal trigger for a myriad of phenomena that are relevant to radiation chemistry and radiation biology. The earliest events that follow the ionization of water, however, remain relatively unknown. In this talk, the speaker will introduce some recent results from his group on the investigation of ionized liquid water using ultrafast spectroscopy. These experiments employ femtosecond pulses spanning the soft X-ray (~2 nm) to the mid-infrared (~8um), and they reveal the ultrafast dynamics of the elusive H_2O^+ radical cation and the hydrated electron precursors. These studies of ionized liquid water have also been extended to biomolecules in aqueous solution, revealing ultrafast structural rearrangement dynamics induced by electron ejection and the lifetimes of the resulting transient radical cations. The results shed light on the elementary ultrafast dynamics that accompany the interaction of ionizing radiation with molecules of biological relevance.

Zhi-Heng Loh is Associate Professor in the School of Chemistry, Chemical Engineering and Biotechnology, Nanyang Technological University (NTU), Singapore. He received his S.B. from M.I.T. and Ph.D. from University of California, Berkeley. After postdoctoral research at UC Berkeley, including a brief stint at the Max Planck Institute of Quantum Optics, he returned to Singapore in 2010 to start his independent career at NTU. His primary research interest lies in the study of ultrafast ionization-induced phenomena in gases, liquid water, and aqueous solutions, probed using femtosecond X-ray to infrared spectroscopies. His awards include the Nanyang Assistant Professorship, the Asian and Oceanian Photochemistry Association Prize for Young Scientists, and the Chemical Society of Japan Distinguished Lectureship Award in Physical Chemistry. He is passionate about undergraduate teaching and currently serves as Associate Dean (Academic) of the College of Science, NTU.



12th January 2024 at 4 p.m.

Hybrid: Homi Bhabha Auditorium, TIFR Mumbai

YouTube Live: https://youtube.com/live/Nu8BenV6q7E?feature=share