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**Postdoctoral researcher position and Ph.D. studentship in VUV-induced ultrafast photochemical dynamics of liquid water at Nanyang Technological University, Singapore**

A postdoctoral researcher position and a Ph.D. studentship are available in Prof. Zhi-Heng Loh's group at Nanyang Technological University, Singapore. The postdoctoral position is available immediately whereas the Ph.D. studentship starts in August 2023. The project aims to use transient absorption spectroscopy to investigate the ultrafast photochemical dynamics of liquid water, induced by femtosecond vacuum-ultraviolet (VUV) excitation.

Supported by a three-year grant from the Ministry of Education, Singapore, a new laser system has been recently installed and a new experimental apparatus is being designed for these experiments. The postdoctoral researcher and the Ph.D. student will jointly work on completing the design and assembly of the experimental apparatus, generating and characterizing ultrashort pulses in the VUV (for pump) and UV to near-IR (for probe), applying these pulses to transient absorption spectroscopy, and writing computer programs for automated data acquisition and processing. There will also be opportunities to participate in complementary experiments with collaborators at X-ray free-electron laser facilities.

This project builds upon the group's efforts on investigating the dynamics of ionized liquid water and biomolecules in aqueous solution; selected relevant references include:

1. "Observation of a Transient Intermediate in the Ultrafast Relaxation Dynamics of the Excess Electron in Strong-Field-Ionized Liquid Water," *Nat. Commun.* **13**, 7300 (2022).
2. "Observation of the Fastest Chemical Processes in the Radiolysis of Water," *Science* **367**, 179–182 (2020).
3. "Ultrafast Proton Transfer of the Aqueous Phenol Radical Cation," *Phys. Chem. Chem. Phys.* **24**, 12236–12248 (2022).
4. "Spectroscopic Observation and Ultrafast Coherent Vibrational Dynamics of the Aqueous Phenylalanine Radical," *Phys. Chem. Chem. Phys.* **24**, 2800–2812 (2022).
5. "Observation of Intra- and Intermolecular Vibrational Coherences of the Aqueous Tryptophan Radical Induced by Photodetachment," *J. Chem. Phys.* **155**, 134306 (2021).

Candidates for the postdoctoral position must possess a strong track record in experimental physical chemistry, chemical physics, AMO physics, or related fields. They must be highly motivated and possess good oral and written communication skills

in English. Experience with the design and building of new experimental setups, familiarity with ultrafast optics and vacuum techniques, and knowledge of computer programming for automated data acquisition and processing will be advantageous. The initial appointment is for one year and is renewable annually subject to mutual agreement.

Candidates for the Ph.D. studentship position must have (or soon have) a B.Sc. or M.Sc. degree in physics, chemistry, or a related field. They should be highly motivated, possess a strong academic record, and have good oral and written communication skills in English. Previous research experience that involves the use of laser and/or vacuum setups as well as programming would be beneficial. The Ph.D. scholarship is for a duration of four years, starting August 2023, and will cover both tuition and a monthly stipend.

The laboratory is nestled in the beautiful NTU campus and offers a vibrant working environment and access to modern research facilities. Campus housing for graduate students is available. A wide range of amenities exist on the NTU campus, and downtown Singapore is easily accessible by public transport. Singapore Changi Airport is a major transportation hub that connects Singapore to many international destinations. Presently there are no COVID-19-related requirements for fully vaccinated individuals entering Singapore, and life in Singapore has practically returned to pre-pandemic normalcy.

Please send any inquiries via e-mail to Prof. Zhi-Heng Loh ([zhiheng@ntu.edu.sg](mailto:zhiheng@ntu.edu.sg)). Applications should include a brief letter of motivation, a CV, and the names and contact information of two referees; applications for the Ph.D. studentship position should additionally include an academic transcript. Applications for the postdoctoral researcher position will be considered until the position is filled, whereas the application deadline for the Ph.D. studentship is 31 January 2023.