香港科技大學
THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY

土木及環境工程學系
DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

SEMINAR

FINE BUBBLE SCIENCE FOR ENVIRONMENTAL APPLICATIONS: ELECTRICAL PROPERTIES, STANDARDISATION, AND DATA SCIENCE

Speaker

Prof. Yoshikatsu Ueda

Assistant Professor, Kyoto University, Japan



Abstract

Fine bubbles, including microbubbles and ultrafine bubbles (often called nanobubbles), have attracted growing interest in environmental and engineering applications. In this seminar, I will introduce developments in fine bubble research in Japan, focusing on electrical and electrochemical properties, characterisation methods, and applications in environmental remediation and agriculture. I will also discuss challenges in the reliable measurement and identification of ultrafine bubbles, as well as international standardisation activities, particularly within ISO/TC 281. Throughout the seminar, I will highlight the importance of reproducible and comparable measurements in linking fundamental research with practical applications. Finally, I will explore opportunities for applying data science to fine bubble research, with an emphasis on integrating reliable measurements, standardisation, and data-driven approaches to better understand bubble behaviour and support the development of environmental applications.

Biography

Dr. Yoshikatsu Ueda is an Assistant Professor at the Research Institute for Sustainable Humanosphere (RISH), Kyoto University, Japan. He received his Doctor of Informatics from Kyoto University in 2004. His research focuses on the electrical and physicochemical properties of fine and ultrafine bubbles (nanobubbles), their characterization, and their applications in environmental remediation and agriculture. He has conducted interdisciplinary research on fine-bubble technologies since 2011, including environmental restoration studies in Fukushima. He is also actively involved in international standardization activities related to fine-bubble technologies through ISO/TC 281. He served as Organizing Chair of Nanobubble 2024 in Kyoto and is Vice President of the Fine Bubble Academy of the Fine Bubble Industries Association.



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