



コロイド & 界面科学研究センター CoLLIS

International seminar

6th International seminar（令和7年6月3日）開催

講師：Professor Virin Kittithammavong, PhD（Department of Civil Engineering, Faculty of Engineering, Naresuan University）

Title: Examination of Microplastic Contamination in Naresuan University

Abstract: The escalating concern surrounding microplastic (MP) pollution, driven by the rapid accumulation of plastic waste, underscores the imperative need for a comprehensive investigation. MPs can be polluted in natural water, drinking water, or even in the air we breathe. My work has focused on Naresuan University's water supply system and the Faculty of Engineering's air, which aims to quantify microplastic presence and understand transport mechanisms. Results indicate that MPs with different types were more polluted in water than in the air. These insights address the persisting issue of microplastic contamination and provide a foundation for future environmental management and planning.

Keywords: Tap water; Plastics; Thailand; Atmosphere; Ambient air



講師：Professor Ampira Charoensaeng, Ph.D (The Petroleum and Petrochemical College Chulalongkorn University)

Title: Surfactant Fundamentals and Interfacial Phenomena in Oil-Related Applications: From Microemulsion Design to Molecular Adsorption Mechanisms

Abstract: Surfactants, or amphiphilic molecules, play vital roles across a wide range of applications—including cleaning and detergency, oil recovery, surface coatings, and nanomaterials. Their functionality is governed by key interfacial phenomena such as microemulsion formation, interfacial tension (IFT) reduction, and adsorption at solid interfaces, all of which significantly impact the economic viability of surfactant-based technologies. In our research group, we successfully developed middle-phase (Winsor Type III) microemulsion formulations using binary blends of anionic surfactants combined with silica nanoparticles (SNPs). These systems were designed to enhance oil solubilization and achieve ultralow IFT, while the SNPs served to reduce surfactant adsorption through competitive and steric interactions at solid surfaces. Performance evaluations in both surfactant flooding and foam flooding experiments demonstrated significant improvements in displacement efficiency, foam stability, and oil recovery. To further explore surfactant–surface interactions, molecular dynamics (MD) simulations were employed to provide atomistic insights into the adsorption mechanisms of surfactants—particularly cationic types—on metal surfaces. The simulations revealed orientation-dependent interactions, including hydrogen bonding, van der Waals forces, and electrostatic repulsion, that influence adsorption kinetics and molecular packing. Our research highlights how a strong understanding of interfacial phenomena—from macro-scale behavior to molecular-level interactions—can inform the design of advanced, cost-effective formulations for oil-related and broader colloidal applications.





5th International seminar（令和4年10月12日）開催

講師：Professor Korbtham Sathirakul, PhD（Faculty of Pharmacy, Mahidol University）
 “Research overview at Professor Korbtham Sathirakul group at Faculty of Pharmacy Mahidol University”





4th International seminar (平成30年12月7日) 開催

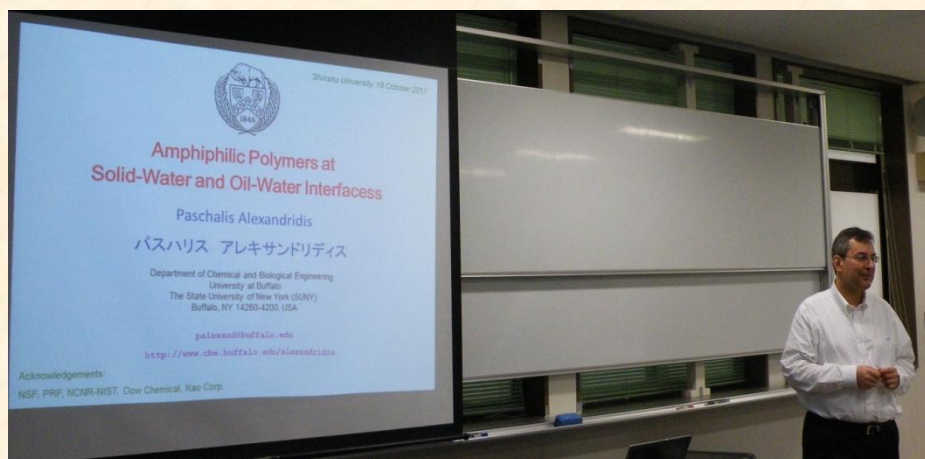
講師：Professor Zhiyong Gu, PhD (University at Massachusetts Lowell)

“Synthesis and Characterization of Multifunctional Nanowires for Nanoelectronics Assembly and Nanosensor Applications”

3rd International seminar (平成29年10月19日) 開催

講師：Professor Paschalis Alexandridis, PhD (University at Buffalo, The State University of New York (SUNY))

“Amphiphilic Polymers at Solid-Water and Oil-Water Interfaces”



2nd International seminar (平成27年9月7日) 開催

講師：Professor Paschalis Alexandridis, PhD (University at Buffalo, The State University of New York (SUNY))

“Soft Materials and Complex Fluids via Self-Assembly: From (Nano)Structure to Function to Applications”

“Hydrocarbon Extraction and Oil Spill Clean-up: Recent Developments, Challenges, and Opportunities Afforded by Surfactant, Polymer and Colloid Science”



1st International seminar (平成27年2月2日) 開催

講師：Professor Marina Tsianou, PhD (University at Buffalo, The State University of New York (SUNY))

“Biomimetic Mineralization via Designer Macromolecules and Environments”

