

Associate Prof. Sheng-Shu Hou

侯聖澍 副教授

Ph.D. : Chemical Engineering, National Cheng Kung University

B.S. : Chemistry, National Cheng Kung University

Email : sshou@mail.ncku.edu.tw

Phone : 886-6-2757575 ext 62641

Office : Room No.93B11 (11F)



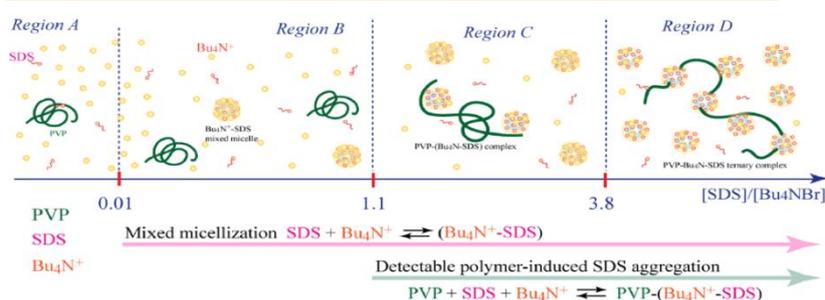
Research Interests

Polymers, Colloids, and Surfactants Lab: Our group works within the Physical-Chemistry domains in the broad fields of polymers, colloids, and surfactants. We study interactions between water-soluble polymers and amphiphilic molecules (surfactants) using nuclear magnetic resonance (NMR), fluorescence, and MALS/SEC. These techniques have enabled us to "solve" important aspects of microstructures of mixed micelles and polymer-surfactant complexes. In terms of the structural details, we can interpret how surfactant molecules interact with polymers. We are interested in the synthesis amphiphilic polymers, which can be used as dispersants to prepare stable aqueous inorganic colloids. Recently, we have initiated a new project, which investigates the competitive/cooperative interactions between hydrogen-bonded interpolymer complexes (HIPCs) and surfactants. We developed techniques for preparing HIPC nanoparticles, which show excellent colloidal stability. These HIPC nanoparticles are promising candidates for drug delivery applications.

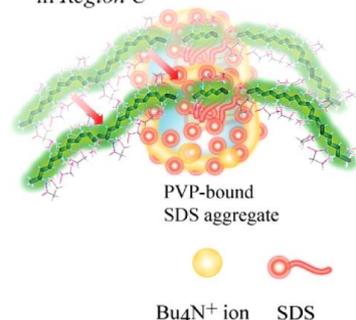
Representative Publications

1. Tzeng, J.-K.; **Hou, S.-S.*** "Interactions between poly(*N*-vinylformamide) and sodium dodecylsulfate as studied by fluorescence and two-dimensional NOE NMR spectroscopy" *Macromolecules* **2008**, *41*, 1281-1288.
2. **Hou, S.-S.***; Tzeng, J.-K.; Chuang, M.-H. "Intermolecular association and supramolecular structures of the PNVF-LiPFN and PVP-LiPFN complexes in aqueous solutions" *Soft Matter* **2010**, *6*, 409-415.
3. Lin, J.-H.; Chen, W.-S.; **Hou, S.-S.*** "NMR studies on effects of Tetraalkylammonium bromides on micellization of sodium dodecylsulfate" *J. Phys. Chem. B* **2013**, *117*, 12076-12085.
4. Lin, J.-H.; **Hou, S.-S.*** "Effects of organic salts on polymer-surfactant interactions: roles of Bu₄NBr and Pr₄NBr in PVP-SDS complexation" *Macromolecules* **2014**, *47*, 6418-6429.
5. Lin, J.-H.; **Hou, S.-S.*** "Structure and molecular dynamics of sodium dodecylsulfate micelles modified with hydrophilic short-chain imidazolium salts in aqueous solution" *J. Colloid Interface Sci.* **2016**, *474*, 78-87.

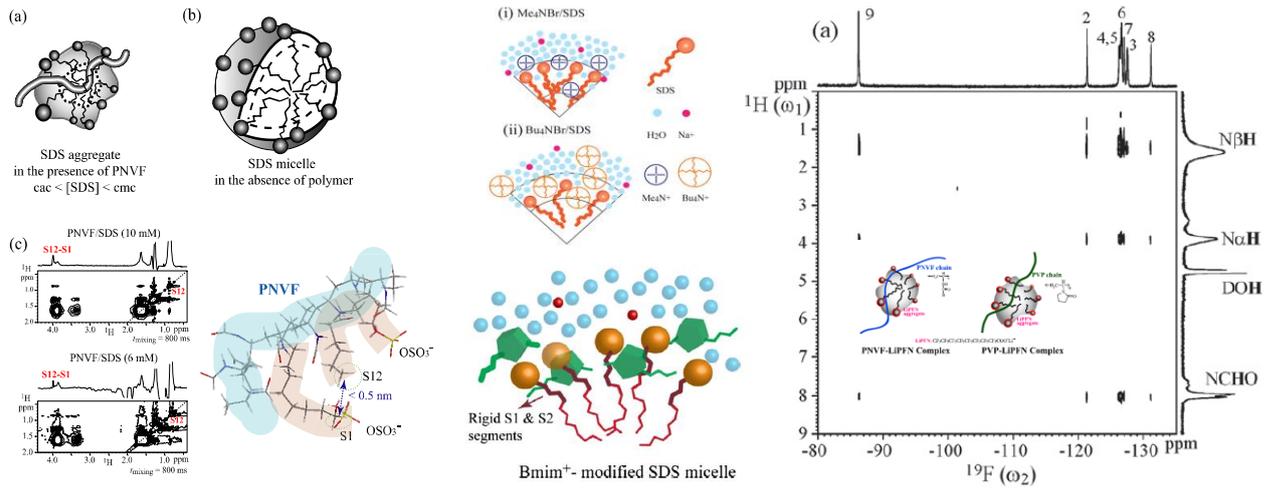
Effects of organic salts on PVP-SDS interactions



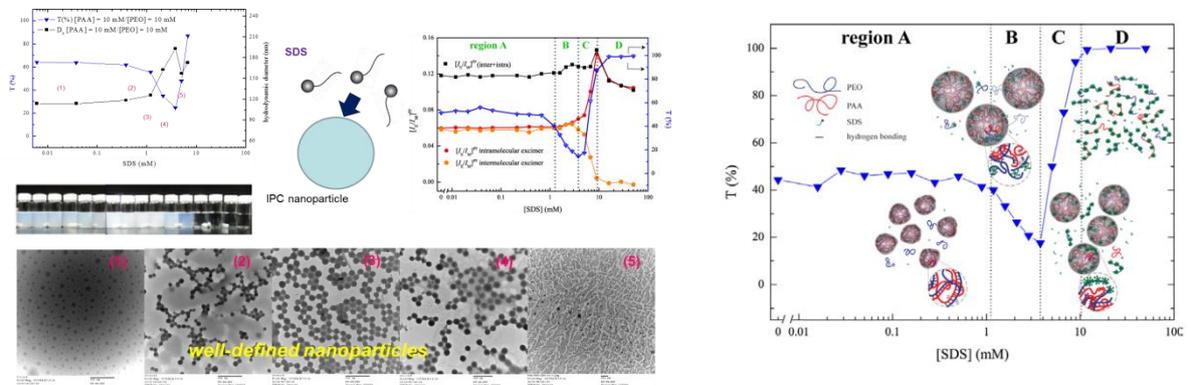
PVP-(Bu₄N⁺-SDS) complex in Region C



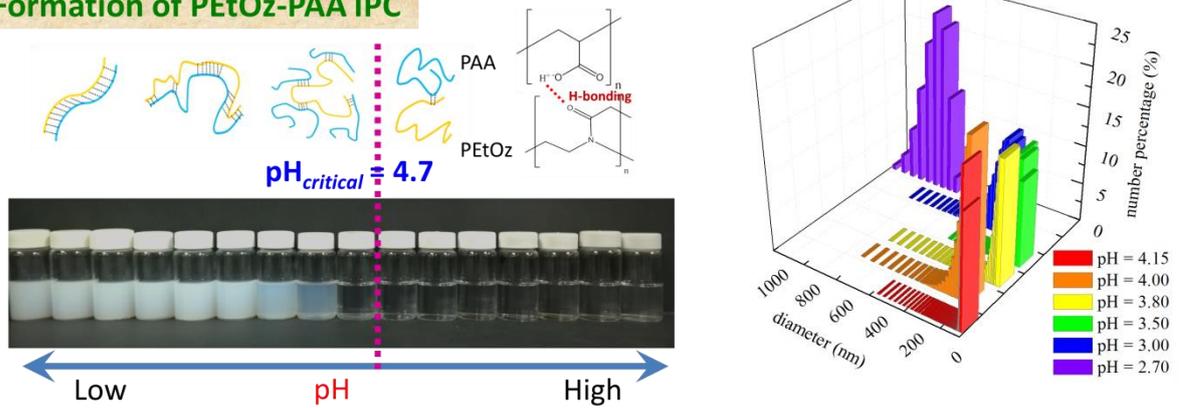
Elucidation of microstructures of mixed micelles and polymer-surfactant complexes



Hydrogen-bonded interpolymer complex/nanoparticles with good colloidal stability



Formation of PEtOz-PAA IPC



Synthesis of poly(VAc-co-MMA) macromonomer by cobalt-catalyzed chain transfer

