**Research Interests**
- Biomedical engineering
- Surface chemistry
- Interfacial transport phenomenon

**Representative Publications**

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**Catonic vesicles**
- Synthesis of ion pair amphiphiles (IPA)
- Preparations of catonic vesicles
- Investigation of physical characteristics of vesicles
- Applications on drug/gene delivery

**Vesicular bilayers**
- Analysis of molecular packing within vesicular bilayers
  - Tools: • Fourier transform infrared spectroscopy
  - • Fluorescence depolarization measurement
  - • Molecular dynamics simulation

**Monolayers**
- Analysis of molecular packing and interaction
  - Tools: • Surface pressure-area isotherm
  - • Infrared reflection-absorption spectroscopy
  - • Fluorescence microscopy
Preparations and applications of charged drug/DNA delivery carriers

Cationic vesicles with reasonable stability and specific charge characteristics are prepared from cationic surfactants or ion pair amphiphiles with a proper process. Moreover, the feasibility of using the stable cationic vesicles with charges in the gene/DNA delivery applications is examined.

Investigation of mixed layer behavior at interfaces

Fluorescence microscopy and infrared reflection-absorption spectroscopy are applied to analyze the monolayer morphology and molecular arrangement at air/liquid interfaces for investigating the molecular interaction mechanisms involved in mixed layer systems.