

CHEM5301 Colloids and Surface Chemistry

Course Description:

Colloids are of increasing importance in both industry and academics. Not only do many commercial products involve colloids, but research in modern chemistry, biology, material science, and physics often requires knowledge of the colloidal domain. This course will give the student an introduction to the physico-chemical principles governing surface phenomena and the properties of colloidal materials. We will explore the interactions and self-organization on the nanometer and micron scale with great relevance for material engineering as well as biological processes.

Main Course Outline (for reference only):

1. Colloidal Systems: History, Classifications and Examples
2. Interfacial Phenomena: Liquid-Gas and Liquid-Liquid Interfaces
3. Interfacial Phenomena: Solid-Gas Interfaces
4. Interfacial Phenomena: Solid-Liquid Interface: Wetting
5. Adsorption at the Solid-Liquid Interface: Non-electrolytes and Electrolytes
6. Electrokinetic Phenomena and Colloidal Stability
7. Surfactants
8. Polymers in Colloidal Systems
9. Dispersions, Aerosols and Foams
10. Emulsions