



COLLOIDS AND SURFACES

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IIT Madras

TYPE OF COURSE : Rerun | Elective | UG/PG

COURSE DURATION : 8 weeks (26 Jul' 21 - 17 Sep'21)

EXAM DATE : 26 Sep 2021

INTENDED AUDIENCE : B.E/M.E/M.Tech/Ph.D

INDUSTRIES APPLICABLE TO : Consumer product industries (HUL, P&G, Paints, food and others)

COURSE OUTLINE :

This course introduces the fundamentals of colloids and nanoparticle science, wherever possible applications of these concepts will be discussed.

ABOUT INSTRUCTOR :

Associate Professor, Department of Chemical Engineering, Indian Institute of Technology- Madras. Before joining IIT-Madras in February 2011, I spent 3 months as visiting fellow at KULeuven (Belgium) in Prof. Jan Vermants group. I was a postdoctoral researcher with Prof. Norman J. Wagner at the University of Delaware (USA). I studied chemical engineering at SIT, Tumkur (Bangalore University), and received my M.S (Research) from IISc, Bangalore, by working on the determination of local dispersion coefficient and local holdup in a packed bed using X-rays. My PhD in chemical engineering is from KULeuven, Belgium (Prof. Jan Vermant). My PhD thesis was on - Tailoring colloidal gel rheology in bulk and at interfaces: Exploiting shape and surface chemistry effects.

COURSE PLAN :

Week 1: Introduction to Colloids

Week 2: Characterization of Colloids

Week 3: van der Waals Interactions

Week 4: van der Waals Interactions (continued)

Week 5: Colloid-Polymer Interactions

Week 6: Electrical Double Layer Interactions

Week 7: Electrical Double Layer Interactions (continued)

Week 8: Electrokinetics and Particles at Interfaces