



## PhD Project

### Project Details

Project Title	Designer peptides for vesicular assembly
Project Summary	We intend to design peptides that could assemble to form spherical vesicles. A rational design approach based on molecular modeling is the objective. Presently, there is no rational design approaches for the design of vesicles. These self-assembled vesicles are useful for the delivery of drugs into the cell interior. The project will involve a combined experimental and molecular simulation based investigation to elucidate underlying thermodynamics of the self-assembly process involved, carry out a rational optimization of peptide design, and extensive characterization of size and morphology of self-assembled species. The student will get training in organic synthesis, spectroscopy techniques, molecular simulations, and thermodynamics of self-assembly.

### PhD Supervisors

Role	Faculty	Academic Unit in IITD	Email ID
Supervisor 1	Gaurav Goel	Chemical Engineering	goelg@iitd.ac.in
Supervisor 2	V Haridas	Chemistry	haridasv@iitd.ac.in

### Project requirements (Student qualifications, experience required, etc)

- MSc Chemistry, MSc Physics, B. Tech., or M. Tech. in Chemical Engineering (Mathematics and coding related courses at UG/PG level required)
- Prior training in some of these concepts: organic synthesis, spectroscopic characterization, molecular simulations, molecular thermodynamic theory

### Source of funding (IRD/FITT Project details, if any)

Student with fellowship, Institute slot available

### Role of Faculty Members involved:

GG-Molecular modeling, self-assembly thermodynamics, peptide design using structure bioinformatics

VH-Chemical synthesis and characterization