

IPPH Research - Formulation

“**Formulation**” combines a drug with biologically inert materials to create a product with the desired properties. Properties that can be controlled by formulation include apparent solubility and dissolution rate, chemical stability, protein aggregation, and crystal polymorphic form. Research in formulation addresses the rates and mechanisms of chemical degradation reactions, the nucleation and growth of pharmaceutical crystals, and the development of novel excipients that stabilize the drug. **The Department of Industrial and Physical Pharmacy is a world leader** in developing fundamental understanding and new technologies for formulating pharmaceutical solids.

- [Stephen R. Byrn](#) (*Charles B. Jordan Professor*) – solid state formulation and stability of small molecules, pediatric formulation, reduced dose formulation
- [Tonglei Li](#) (*Interim Head, Department of Industrial and Physical Pharmacy, Allen Chao Professor*) – computational prediction of crystal structure, nanocrystals, amorphous-crystalline transitions
- [Rodolfo Pinal](#) (*Associate Professor*) – methods for enhancing solubility, accelerating dissolution and optimizing bioavailability for poorly water soluble drugs. Director of the Center for Pharmaceutical Processing Research (CPPR), which for 20 years has brought together collaboration between industry and academia conducting activities on formulation and processing research.
- [Lynne S. Taylor](#) (*Retter Professor of Pharmacy*) – amorphous solids, role of moisture in pharmaceutical solids, development of analytical methods to characterize solids
- [Elizabeth M. Topp](#) (*Professor*) – solid-state formulation and stability of biologics, control of protein aggregation