

IFPRI Research Project Brief

Bridging the Gap Between Model and Industrial Colloidal Formulations

The International Fine Particle Research Institute (IFPRI) wishes to fund a project to develop and characterize models of complex industrial colloidal formulations. We are calling these “simplified industrial formulations” (SIFs). Real industrial formulations have complex compositions that make detailed mechanistic analysis of rheology difficult. Academic systems are designed specifically to make detailed characterization possible, but their simplicity may hide or eliminate rheological behavior exhibited by the industrial formulations. Thus, the long-term goal of this project is to ascertain what properties need to be included in model formulations (e.g. particle shape, roughness, porosity, surface chemistry) to reproduce behavior of real formulations. This will involve:

- working with IFPRI member companies to understand the composition of their formulations and the function of ingredients and to remove ingredients believed to have minimal impact on rheological behavior. The resulting SIFs will be synthesized by the member companies, including Syngenta (simplified agricultural concentrate) and Chemours (simplified paint).
- characterize the key behavior of the SIFs, i.e. rheology and structure evolution
- incrementally evolve existing model systems to include greater complexity that can reproduce the behavior of the SIFs