IFPRI Review Brief

Critical Review of Tribology, Friction, and Contact Mechanics in Wet Systems

The International Fine Particle Research Institute wishes to commission a comprehensive critical literature review of tribology, friction, and contact mechanics in wet systems. The review should provide a critical assessment of the literature on the modes of interaction during lateral engagement of particles in suspensions at high solids volume fraction. Do force chains exist, and if so when are they relevant? What are the mechanisms for modifying friction in wet systems, i.e. using surfactants, polymers, nanoparticles, or electrostatics? What techniques have been used for investigating contact mechanics in these systems, and what's on the horizon? Finally, how does friction in wet systems compare to friction in dry systems?

The review should cover both aqueous and non-aqueous systems. It should explore contact boundary layer lubrication, hydrodynamic and elastohydrodynamic phenomena. It should survey a broad range of topics, for example literature from high solids paste processing, chemical mechanical polishing, filled polymer processing, slurry pumping and flow.