



## IFPRI PROJECT / REVIEW BRIEF TEMPLATE

1.0	(Working) Title	Critical Review of Tribology, Friction and Contact Mechanics in Wet Systems
1.1	Project or Review	Review
1.2	Technical Area <sup>1</sup>	Wet Systems
2.0	Submitted by	Scott C. Brown, John Wight, John Hone, Chandresh Malde, Kelly Krzysik, Eric Furst
2.1	Member company/ies	Syngenta, Chemours, Corning, Syngenta, Johnson Matthey, Dow, UD
2.2	Idea creation date	June 26, 2018
2.3	Last modification date	
3.0	Short goal description	State of the Science Review of Friction, Tribology, and Contact Mechanics in Wet Systems
3.1	Objectives	<ol style="list-style-type: none"> <li>(1) Provide a critical assessment of the literature on the modes of interaction during lateral engagement of particles in high solids systems. (Do force chains exist and if so when are they relevant?)</li> <li>(2) Identify and review the mechanisms for modifying friction in particle systems (surfactants/polymers, nanoparticles, ions/solvate)</li> <li>(3) Review the techniques, pitfalls and recent advances</li> <li>(4) Review tribology and friction in industrial processes (i.e., triboerosion in die extrusion, wall drag and other phenomena, heat generation)</li> </ol>
3.2	Scope	<ul style="list-style-type: none"> <li>- Aqueous and non-aqueous systems</li> <li>- Explores contact, boundary layer lubrication, elastohydrodynamic and hydrodynamic phenomena, identifying where and when they might and might not be relevant.</li> <li>- Includes literature from high solids paste processing, chemical mechanical polishing, filled polymer processing, and slurry pumping and flow.</li> <li>- Draws comparisons and contrasts to friction in dry systems</li> </ul>
4.0	Contractor(s) with contact information	Lucio Isa, Nick Spencer, ETH Zurich

<sup>1</sup> One or more from the following list: W = wet systems; D = dry systems; F = particle formation; SR = size reduction; M = modeling; SE = systems engineering

4.1	Comments / experiences	