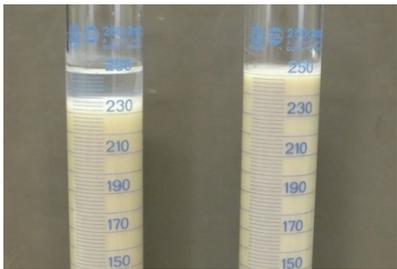




IFPRI BRIEF TEMPLATE

Check One: **Project** **Review** **Collaboration**
 Workshop **Other**

Descriptive Title	Developing a Fundamental Understanding and Model of Syneresis in Suspensions
Working Title¹	Developing a Fundamental Understanding and Model of Syneresis in Suspensions
Technical Area²	Wet systems
Date	6/13/23
Short Description	<p>Syneresis (seen below) is a failure of the gel structure in a formulation that results in the expulsion of a liquid from the product and formation of two layers. Syneresis can be found in multiple industries and is often an undesirable characteristic of the end product by the customer.</p> <div style="text-align: center;">  </div> <p>http://tolsaindustrial.com/aditivos/en/productos_soluciones/syneresis-control/</p> <p>There is a lack of literature understanding fundamentals of syneresis in formulated suspensions. Current methods for predicting syneresis involve Arrhenius aging or freeze/thaw cycling, which may not be indicative of real-time results. There is no understood computational model to predict the results.</p> <p>A successful proposal would develop a basic understanding of the physical and chemical causes, establish a predictive model to determine the degree of syneresis.</p>
Objectives	<ol style="list-style-type: none"> 1. Understand causes of syneresis, both chemical and physical 2. Develop model capable of determining degree of syneresis

¹ Title used in meeting agendas and file archives

² One or more from the following list: W = wet systems; D = dry systems; F = particle formation; SR = size reduction; M = modeling; SE = systems engineering

Scope	<p>Water and oil-based systems are in-scope as well as multi-phase systems such as suspension emulsions. Solids in suspension may be either organic or inorganic. All rheology modifiers are in-scope, such as cellulose, gums, clays, polymers, silicas and salts. Solids volume fractions will be 5 to 50%.</p> <p>Methods including accelerated aging as a predictive model are out of scope.</p>
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