Review of: "On the rheology of thixotropic and rheopexic suspensions: accounting for the formation of trimers"

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Potential competing interests: No potential competing interests to declare.

Review of the article by Levinsky

This article deals with a theoretical attempt to describe the rheological behaviour of suspensions under time-dependent stress-shear rate fields. After a careful reading of the paper, I found the manuscript is not suitable for publication, based on the following concerns:

1.- The author presents data on the shear stress-shear rate behaviour and a theoretical model based on the Doherty equation generalized for multi-component suspensions. The protocol from which data is produced is not mentioned. Since thixotropy and rheopexy are time-dependent phenomena, which are the stress or shear rate histories (increasing-decreasing cycles) as a function of time from which plots are produced? In this regard, plots of the main variables as functions of time are not presented.

2.- The literature search is quite incomplete and poorly explained. There are numerous recent analyses on time dependent rheology of suspensions that are not mentioned, including hysteretic cycles shown in the figures.

3.- The “constitutive equation” (Eq. 7) is not an invariant equation of state. It is an empirical power-law relation of stress-shear rate. How is it possible that such equation may describe time-dependent phenomena? Moreover, in such complex systems, the yield stress is coupled to plastic and viscoelastic behaviour, which cannot be described by such model.

4.- The number of parameters used is enormous and hence it leads to a fitting exercise without the required physics support.