# 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.

The manuscript by Levinsky modeled the thixotropy and rheopexy of suspensions. It needs a major revision because of the following reasons.

1. The formation of dimers, trimers, and n-body aggregates has been widely studied in experiments and simulations. Theoretically, the evolution of the distribution of aggregates can be considered by population balance. However, the number of parameters is a problem. The authors can refer to the review of Larson (J. Rheol. 2019, 63, 477-501) for the latest advancements.
2. There are 12 parameters in the model. It is unclear how to ensure the uniqueness of the fitting parameters.
3. The validation of the model is poor. There are many experiments related to different aspects of thixotropy. The model should be compared with different experiments of one system using the same set of parameters. Such comparisons help to justify the linear dependence of k on the shear rate.
4. When only dimer is considered in the absence of shear, the only remaining term (k1 term) is negative (k1>0), indicating all particles will automatically convert to dimers. The physical meaning of such a case is not clear.
5. It seems that no constraints of phi1 and phi2 are used in Eq. (4). It might be possible to get negative phi1 and phi2 using non-equilibrium initial values.
6. The yield stress should be the $13^{th}$ parameter. It needs to depend on other parameters.