

# Numerical simulation of viscoelastic particle suspensions : a first step towards modeling flow induced crystallization in filled polymers

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# NUMERICAL SIMULATION OF VISCOELASTIC PARTICLE SUSPENSIONS; A FIRST STEP TOWARDS MODELING FLOW INDUCED CRYSTALLIZATION IN FILLED POLYMERS.

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## ABSTRACT

*A new finite element model has been developed for direct simulation of inertialess particle suspensions in simple shear flow. Distinctive features are:*

- *The force-free torque-free rigid body motion is assigned by the Lagrangian multipliers, but on the particle boundary only*
- *A sliding window concept is introduced to impose the bi-periodicity of simple shear flow and it is implemented by mortar element methods.*
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*The project was initiated by the need to understand the micro-structural rheological behaviour of the particle-filled polymer melt flow, especially for the application to flow induced crystallization kinetics of such systems.*