

Requirements

- Master degree in physics or related
- Background in computational physics
- Programming skills in C++
- Experience in particle simulations e.g. DEM and LBM is preferred



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For further information please contact:

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Numerical modelling of wet granulation

Background

Reverse phase wet granulation (RPWG) is a very recent development in wet granulation technique. This involves the immersion of dry powder formulation into liquid binder followed by controlled breakage to form granules. Our aim is to develop a complete predictive model for RPWG granulation process using a computational approach. This will require the development of a numerical set-up with multi-scale particle models for fine powders in a bath of liquid binder with the consolidation and breakage of granules. Recent approaches adopted the Discrete Element Method (DEM) in order to include the particle dynamics, which has proven to efficiently simulate high shear granulation process. We plan to develop a numerical set-up for RPWG based on particle-based DEM method by extending an established DEM based open-source code MercuryDPM. We will make a two-way coupling between DEM and an advanced fluid-particle coupling solver based on Lattice-Boltzmann Method (LBM) to deal with the interstitial fluid phase.



Task

Your task will be to develop a preliminary numerical set-up for the reverse phase wet granulation. This will require establishing a simple geometry for the granulator using MercuryDPM and extending the code to couple with an appropriate LBM solver.