The Research Center Pharmaceutical Engineering GmbH (RCPE) is a global leader in pharmaceutical engineering sciences. We help our partners create and manufacture advanced medicines for patients worldwide through optimizing products and processes.

PAID DIPLOMA / MASTER'S THESIS

Powder Simulation with Eular Granular Model and Discrete Element Method

Ref. No. DA 163

To dedicated students of Mathematics, Physics, Mechanical Engineering, or related disciplines, we offer an opportunity to write a paid Diploma/Master's thesis. This thesis is done in close collaboration with the Institute of Thermal Engineering TU Graz.

Objective

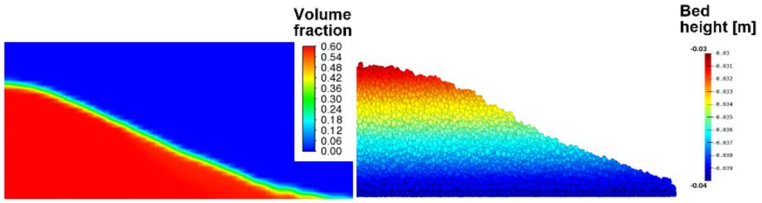
The Discrete Element Method (DEM) is used with great success for the simulation of powder flows, but naturally leads to a high numerical effort as the number, size and shape of the particles approach real systems. Therefore, in the context of this master thesis, IWT together with RCPE set the goal to validate an adaptation of the two-fluid model (Euler Granular) for powder flows implemented in ANSYS Fluent with experiments and to benchmark it against the XPS DEM code of RCPE.

Work content:

- Generation of validation cases for the Euler granular simulations in ANSYS Fluent and the XPS DEM simulations.
- Adaptation of the Euler granular model for different relevant types of granular materials and validation with experiments.
- Performance of XPS-DEM simulations and comparison with experiments.
- Benchmarking of the Euler granular model with XPS-DEM.
- Discussion of model results and suggestions for improvements and application of the models.

Skills:

- Basic knowledge of programming with Fortran, C/C++, Python, etc.; Basic knowledge of numerical modeling.



Within the framework of this diploma/master's thesis we offer the following

- Extensive participation in a top-level and industrially relevant research project in an international environment
- Supervised training in the task
- Assistance of experienced staff with the implementation of innovative ideas
- Access to highly modern infrastructure on campus of Graz University of Technology
- Assistance with the publication of results

Financing

- Compensation on the basis of a service contract

If you are interested in writing your thesis at the interface between university research and industry/ business and to contribute to the optimization of product and process development in the pharmaceutical industry, please contact us indicating the reference number.

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