

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



FOR OUR TEAM/AREA Modeling and Prediction (A1)
WE ARE OFFERING A

PAID DIPLOMA/ MASTER'S THESIS

INTERACTIVE ONLINE TOOL FOR AUTOMATED DEM
PARAMETER CALIBRATION
REF. NO. DA 142

To dedicated students of Chemical Engineering, Particle Engineering, Mechanical Engineering, Informatics, Software Engineering or related disciplines, we offer an opportunity to write a paid Diploma/Master's thesis.

OBJECTIVE:

Calibration of the contact parameters for a Discrete Element Method (DEM) approach remains one of the key issues for an accurate description of powder flows in technical applications. Ideally, in such a calibration approach, various macroscopic responses are used to identify a suitable set of contact parameters. This, however, results in two high-dimensional challenges: (1) With respect to DEM simulations, the parameter space contains at least 10 degrees of freedom – the contact parameters. Each of these parameters influences the target macroscopic response. (2) The macroscopic target space is of high-dimensionality as well since various bulk powder tests are commonly used. The delicate task arising is to develop a framework that addresses the above-mentioned problems and yet remains flexible and computationally feasible.

At the moment, this is realized by a combination of regression models, data enrichment, Artificial Neural Networks (ANN), together with a Genetic Algorithm (GN).

The goal of this Master thesis is to standardize and further develop the available method with regard to post-processing (based on Python) and implementation as a Web-application using e.g. "Polty" and "Dash".

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
- Access to highly modern infrastructure on campus of Graz University of Technology
- Adequate compensation and opportunities for personal and professional development

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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