Mini Thesis

FE Modeling and Simulation of Powder Compaction

The Project

The Powder Technology (PT) process involves compressing the powder, normally in a container, which is then heated in a protective environment lower than the melting point of the constituent thus inferring the strength on the material for the intended use. Numerical modelling and simulation plays an important role in predicting the densification and the shape/volume changes during the PT process. A physical based numerical model for sintering has been successfully implemented through FEM simulations in Abaqus. The scope of this work is to model and simulate the compaction process that would determine the temperature and relative density distribution of the powder compact that are very essential to the sintering process.

Tasks

A literature survey needs to be conducted to determine the ideal powder compaction model. On selection of the powder compaction model, the model will be implemented in Abaqus/Standard through user defined subroutines such as UMAT or CREEP. The material under consideration here is Alumina.

Requirements

- Knowledge on basic programming (FORTRAN, C)
- Knowledge on FEM and usage of FEM software (ABAQUS)

We offer

A comprehensive training and friendly work environment. A speedy conclusion of the work is desirable and is thus supported with proper guidance from our side.

Contact

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