

COLLABORATIVE RESEARCH CENTER 837

## INTERACTION MODELING IN MECHANIZED TUNNELING

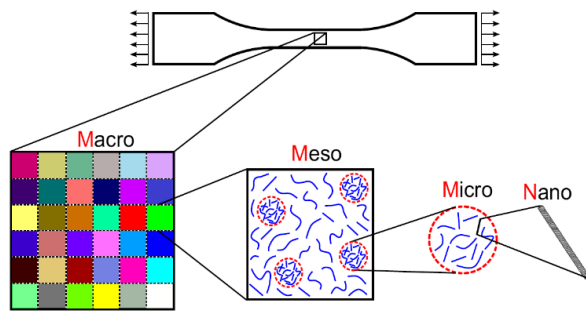
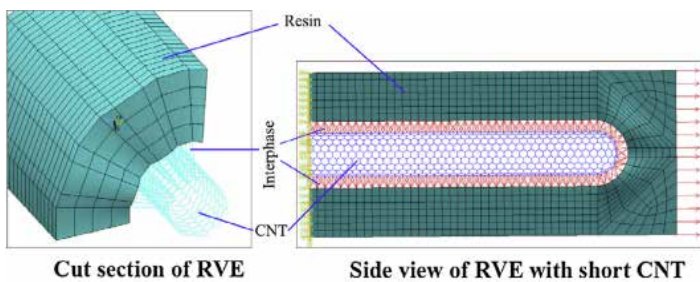
RUB

# COMPUTATIONAL MODELLING, OPTIMIZATION AND DESIGN OF POLYMERIC NANO COMPOSITES

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The development of novel man-made materials is among the main reasons that made transistors and computers much faster, many electronic devices smaller and cheaper or medical implants more compatible. The key criteria for the choice of a material w.r.t a specific application are the macroscopic properties. However, the macroscopic properties are governed by the features and interactions at a much finer length scale. For the design of a new material, it is therefore of utmost importance to understand and quantify the effects taking place at the finer scale and how they are linked to the coarser scales.

Guests are welcome!

As (experimental) manufacturing and testing is time-consuming, expensive and sometimes unfeasible, computational methods were developed to support the design of new materials and structures.

In this talk, Dr. Zhuang will present her recent work in multiscale and multiphysics modelling for the characterization, optimization and design of nanocomposites. Some novel computational methods including peridynamics and phase field method will be presented for characterizing the fracture properties. She will also show some interesting applications of the methods in designing and optimizing nano energy harvester.