

On the influence of shape and nanostructure on the mechanics of nanoparticles

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In recent years, several groups focused on probing the strength, ductility and deformation processes of nanoparticles using molecular dynamics simulations specially to support compression tests within the electron microscopes. Now, studies deal with most of materials classes including metals, ceramics and semi-conductors.

In this talk, I will first present the main features of nanoparticles mechanical properties and elementary deformation processes mostly based on recent studies published in the field. A specific attention will be paid to the influence of freshly-identified key parameters such as shape and surface structuration relying on atomic-scale and dislocation dynamics simulations performed in my group.