SONDERKOLLOQUIUM

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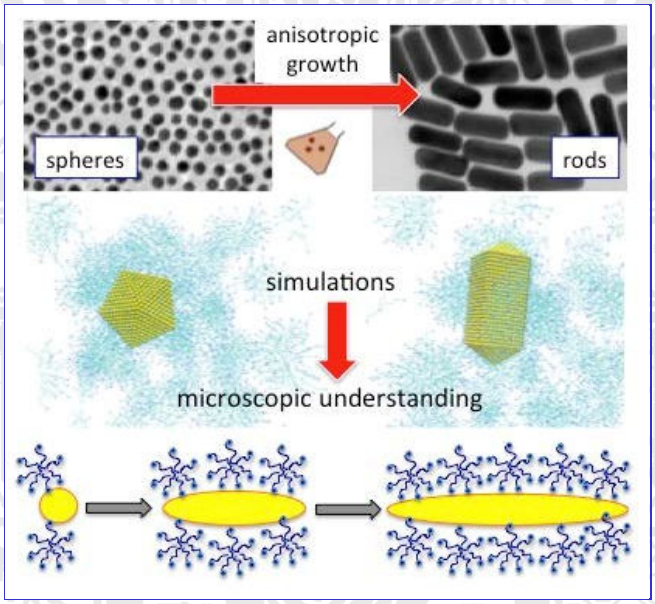

ROLE OF INTERFACIAL INTERACTIONS IN SHAPING THE CRYSTAL GROWTH

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Liquid-solid interfaces are ubiquitous and responsible for a number of phenomena encountered in biological, chemical and physical processes. Surface-induced changes of material properties are not only important for the solid support but also for the liquid itself.
Among properties controlled by the specific interactions at solid/liquid interface is crystallization and shape selective crystal growth. This is fundamental for example to the synthesis of nanoparticles with specific tailored shape/size. In biomineralization the interaction between soft (proteins/solution) and hard matter (mineral), which occurs at the interface, is the key do develop unique structural properties.
Atomistic simulation can provide a powerful tool to understand interfacial phenomena. They can provide a microscopic interpretation of the experiments and identify which are the key interactions controlling a given phenomena allowing for a tailored intervention to shape and tune the material properties.
I will present a few examples from my research activity where we use atomistic simulations, also including electronic structure, in order to address the properties of solid/liquid interfaces.