

Nils Kröger

Title: How to build a glass house: from silica morphogenesis in diatoms to synthetic biology for biominerals

Diatoms are unicellular microalgae that are of interest in many areas ranging from ecology to materials science. They are the most species-rich group of algae, and play a major role in the global ecosystem, particularly the carbon and silicon cycles. Diatoms produce intricately structured cell walls made of amorphous silica and a small amount of tightly associated organic macromolecules. They can be easily cultivated and are readily accessible to genetic manipulation, and are thus excellent model systems for studying fundamental mechanisms of biomineralization. Here will present an overview on the current understanding of the molecular machinery for silica biomineralization. I will then provide examples how such insight can be translated to the biological synthesis of biominerals with tailored properties for applications in catalysis and drug delivery.