Zernike Colloquium

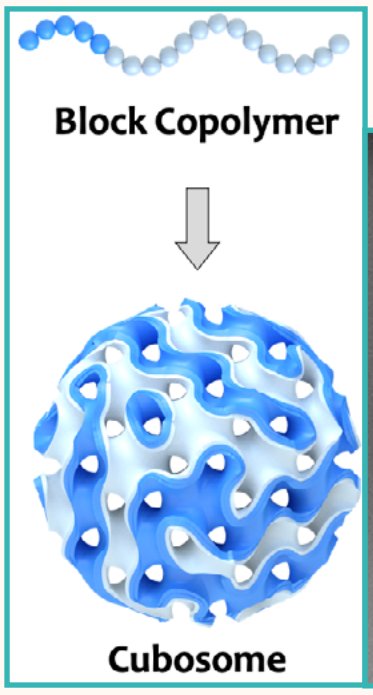
Online Event
Bluejeans Link:
bit.ly/3oyjPRI

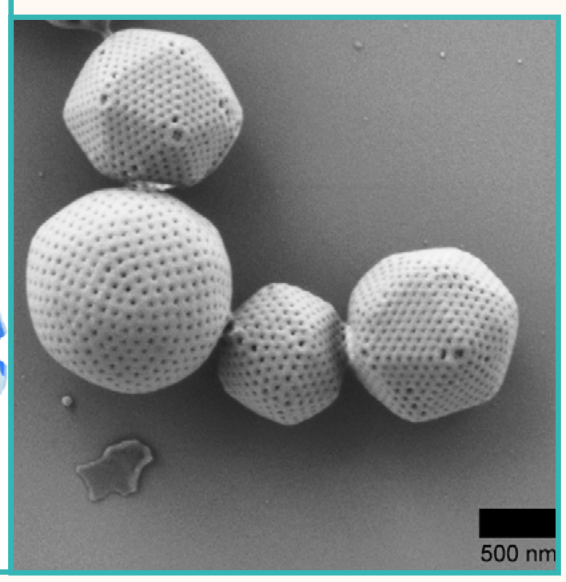
February 3rd, 2022 16:00h

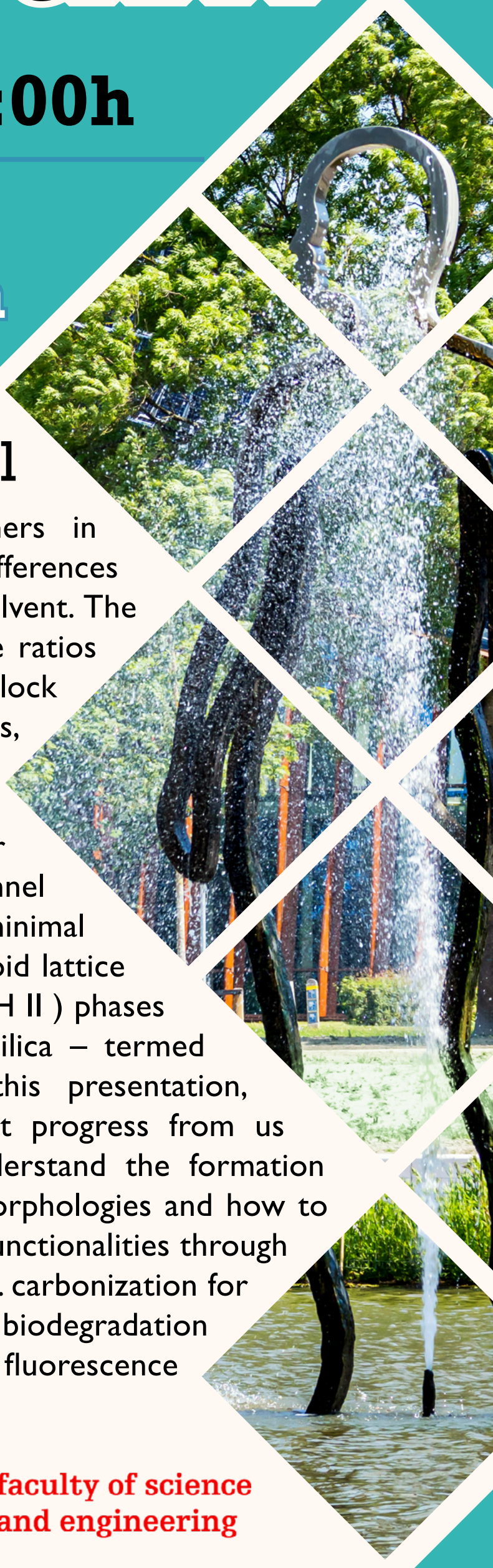
Polymer Cubosomes: Adding Functionality to High Surface Area Micelles

by André H. Gröschel

The self-assembly of block copolymers in solution is controlled by polarity differences of the blocks towards the selective solvent. The block volume or better yet the volume ratios control the shape of the micelle. While block copolymer micelles in the form of spheres, cylinders and vesicles have been studied in detail in the past 25 years, it was discovered only recently that high asymmetry in favor of the hydrophobic block leads to block copolymer microparticles with an inner morphology of highly ordered channel systems. These channel systems often adopt triply periodic minimal surfaces with cubic (Im3m), double diamond (Pn3m) and gyroid lattice – termed cubosomes, or inverse hexagonal (H II) phases as the organic analogues to mesoporous silica – termed hexosomes. In this presentation, I summarize recent progress from us and others to understand the formation of these inverse morphologies and how to introduce specific functionalities through block chemistry, e.g. carbonization for energy conversion, biodegradation for drug release, and fluorescence for bioimaging.







university of groningen / faculty of science and engineering