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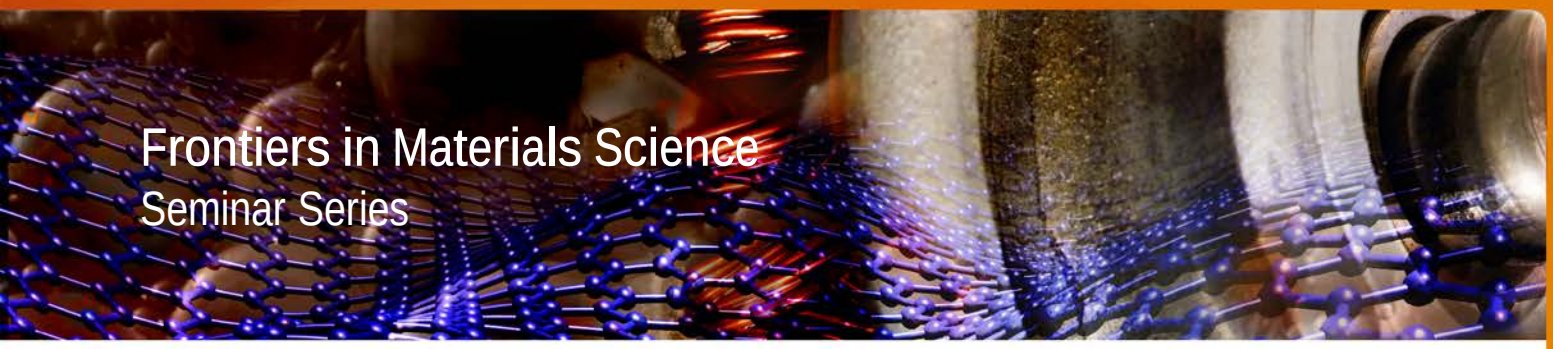

CryoTEM in Materials Chemistry: A Versatile Tool to Study the Assembly of Macromolecular and Hybrid Structures

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EMSL Auditorium

Inspired by the high complexity and functionality achieved in biological systems, Prof. Sommerdijk pursues the use of (macro)molecular self-assembly and biomimetic mineralization to generate hierarchically structured materials. He will present various examples that illustrate how he used time-resolved cryogenic transmission electron microscopy (TEM) to visualize the evolution of morphology and structure in solution from the (sub)nanometer level up. Prof. Sommerdijk combined 2D and 3D (tomographic) low-dose imaging techniques originating from the life science TEM community with techniques from materials science to perform low-dose electron diffraction, cryoSTEM, cryoEDX, and high (lattice) resolution cryoTEM. In addition to 2D and 3D imaging structure formation in bulk solution, he has developed methods to image organic-organic and organic-inorganic interactions at interfaces, as well as methodologies for 2D and 3D imaging in organic solvents. Together these examples will show the power of cryoTEM as a tool to monitor the development of morphology and structure in hybrid and mesostructured materials.

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