



Cinematographic Study of Chemical Events at the Single Molecular Level

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Nowadays, aberration-corrected transmission electron microscopy enables the recording of materials at atomic resolution, and focused electron beams (e-beams) are routinely used in lithographic nanofabrication processes. From a macroscopic perspective, the processes, such as radiolysis and knock-on displacement of atoms, are reasonably well understood and mainly regarded as unwanted destructive side-effects during the imaging process. However, these “side-effects” can also be regarded as a synthetic tool if the interactions are adequately understood.

A particularly attractive class of molecules for the study in TEM are fullerenes and related nanocarbon structures, as they are sufficiently stable to be observed for an extended period and their shape can be well recognized. The talk will focus mainly on recent discoveries of reaction mechanisms that proceed under the influence of the electron beam to form precise nanostructures and how these structures are identified.

