

## Microsymposium

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### *Watching nanocrystals form*

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Reactions in steel containers under solvo/hydrothermal conditions are widely used to produce crystalline nanoparticles. The solvo/hydrothermal approach often provides excellent control over nanoparticle characteristics such as size, size distribution, morphology and crystallinity. However, most progress in the solvothermal field is empirical in nature. Recent development of in situ X-ray scattering techniques now allow real time monitoring of the formation of nanoparticles under high pressure, high temperature conditions, and this opens up the possibility for synthesizing nanoparticles by design. We have developed unique in situ reactors for studies of reactions in sub- and supercritical fluids [1]. By means of Small Angle X-ray Scattering (SAXS), Wide Angle X-ray Scattering (WAXS), Total scattering and EXAFS we have obtained knowledge on the formation and growth of a range of important nanoparticles all the way from the precursor structures to the final crystalline product. In the talk recent examples will be discussed. [1] (a) Jensen et al., *Angew. Chem.* 2007, 46, 1113; (b) Bremholm et al., *Angew Chem.* 2009, 48, 4788; (c) Bremholm et al., *Adv. Mater.* 2009, 21, 3572; (d) Lock et al, *Angew Chem.* 2011, 50, 7045; (e) Jensen et al., *J. Am. Chem. Soc.* 2012, 134, 6785; (f) Tyrsted et al, *Angew. Chem.* 2012, 51, 9030; (g) Nørby et al., *RSC Adv.* 2013, 3, 15368; (h) Eltzholtz et al., *Nanoscale* 2013, 5, 2372

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