Supporting Information for publication with the title "Sols of nanosized magnesium fluoride: formation and stabilisation of nanoparticles"

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Figure 1s shows the WAXS diffraction pattern of sample $Mg(OMe)_{1.6}F_{0.4}$ in comparison to the expected positions of the reflections of the crystal structure comp2 published in [12]. The strongest reflections of theoretical and experimental diffraction pattern are in good agreement. No other crystallographic phases are identified in the diffractogramm.

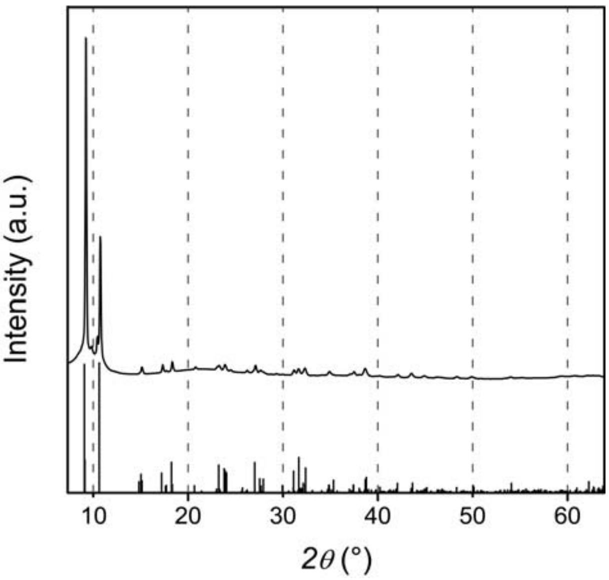

Fig. 1s Comparison of the WAXS diffraction pattern of $Mg(OMe)_{1.6}F_{0.4.}$ with expected reflections of comp2.

Additionally to the DLS experiments, SAXS patterns of levitated magnesium fluoride sol droplets were recorded at different stages of ageing. Because of the rather broad particle size distribution and irregularly shaped magnesium fluoride particles, the evaluation of the SAXS pattern using mathematical models is not recommended. Nevertheless, the decrease of particle diameters with longer ageing times, as observed visually and by DLS measurements is also detected in SAXS measurements. With longer ageing times, the diffractograms are shifted towards larger q values indicating a decrease in particle size (fig. 2s). When compared to the simulated scattering curves, using a Schultz-Zimm distribution of particles with 20% polydispersity, particle sizes of below 5 nm can be determined at long ageing times. After addition of phenylphosphonic acid to a magnesium fluoride sol (fig. 3s), further reduction of the particle size is noticed.

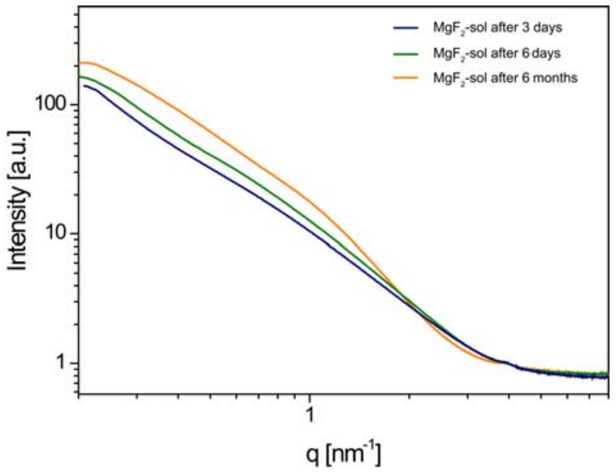

Fig. 2s SAXS curves of MgF_2 sols (0.25 M) after different stages of ageing.

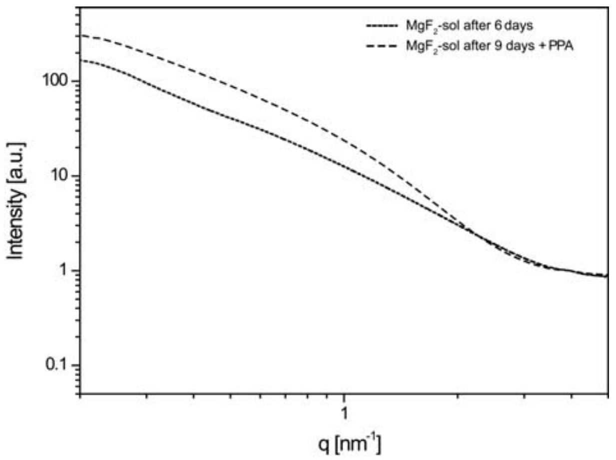

Fig. 3s SAXS patterns of pure methanolic magnesium fluoride sol after 6 days compared to a phenylphosphonic acid stabilized sol