**Fig. S1** TEM images of the cubic *Ia3d* KIT-6 silica taken along a) [111], b) [531], c) [100] and d) [311].
Fig. S2 TEM overviews of the platinum replica network obtained after dissolution of KIT-6 (left TEM image is the expended area of detail in Fig. 1b).
**Fig. S3** Evolution of the low angle XRD diffraction pattern obtained for the mesostructure during formation of the cubic $Ia3d$ phase, as function of time and temperature.