

Electronic Supplementary Information

From NH₄TiOF₃ Nanoparticles to NH₄TiOF₃ Mesocrystals: Steric Hindrance versus Hydrophobic Attraction of F127 Molecules

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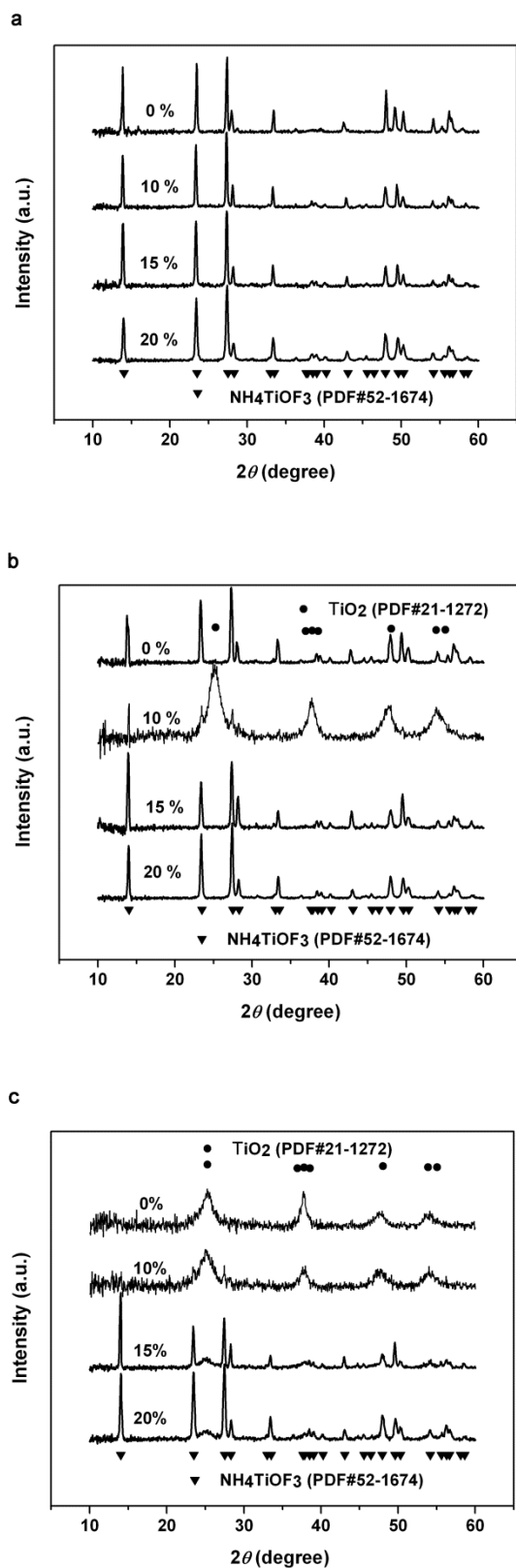


Fig. S1 XRD of as-synthesized particles prepared at various temperature and concentrations of surfactant F127. (a) 4 °C; (b) 23 °C; (c) 35 °C.

Table S1 Summary of the particles synthesized at various conditions based on SEM and XRD results.

Reaction Condition	Crystalline Phase(s)	Morphology
F127 0%, 4 °C	NH ₄ TiOF ₃	aggregated mesocrystal
F127 2% , 4 °C	NH ₄ TiOF ₃	Submicron particle
F127 5% , 4 °C	NH ₄ TiOF ₃	mesocrystal & submicron particle
F127 10% , 4 °C	NH ₄ TiOF ₃	mesocrystal
F127 15% , 4 °C	NH ₄ TiOF ₃	mesocrystal
F127 20% , 4 °C	NH ₄ TiOF ₃	mesocrystal & submicron particle
F127 0%, 23 °C	NH ₄ TiOF ₃	aggregated mesocrystal
F127 2% , 23 °C	NH ₄ TiOF ₃ & TiO ₂	Submicron particle & aggregate
F127 5% , 23 °C	NH ₄ TiOF ₃ & TiO ₂	Submicron particle & aggregate
F127 10% , 23 °C	NH ₄ TiOF ₃ & TiO ₂	Submicron particle
F127 15% , 23 °C	NH ₄ TiOF ₃	mesocrystal & submicron particle
F127 20% , 23 °C	NH ₄ TiOF ₃	mesocrystal & submicron particle
F127 0%, 35 °C	TiO ₂	aggregate

F127 2% , 35 °C	TiO ₂	Submicron particle & aggregate
F127 5% , 35 °C	TiO ₂	Submicron particle & aggregate
F127 10% , 35 °C	TiO ₂	Submicron particle
F127 15% , 35 °C	NH ₄ TiOF ₃ & TiO ₂	mesocrystal & Submicron particle
F127 20% , 35 °C	NH ₄ TiOF ₃ & TiO ₂	mesocrystal & Submicron particle

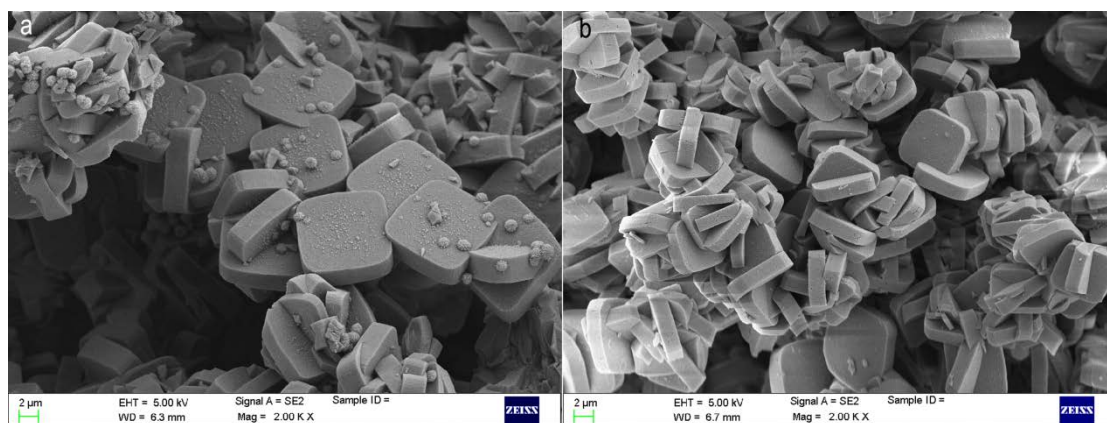


Fig. S2 SEM images of the as-synthesized aggregated NH₄TiOF₃ mesocrystals grown at 23 °C for 3 days with (a) 10% of PEG 2000 and (b) 10% of PEG 20000.

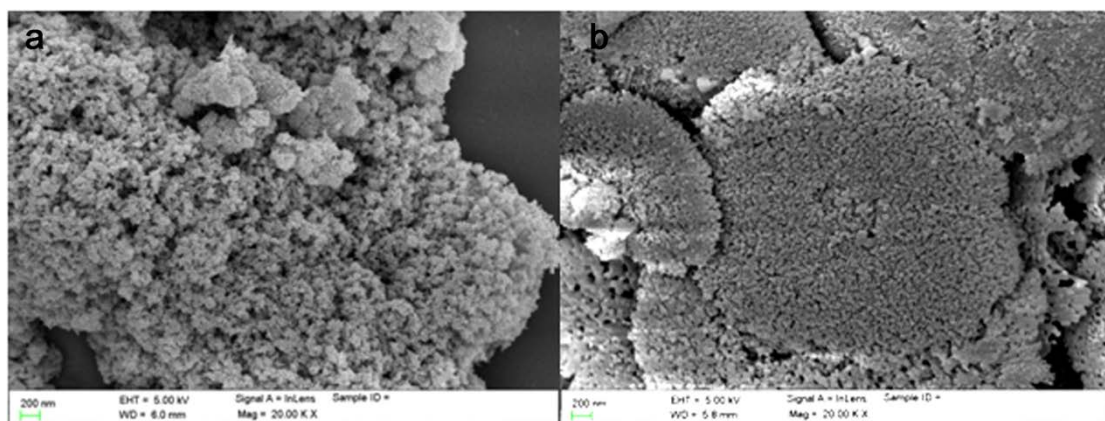


Fig. S3 SEM images of the calcined products of particles prepared at 23 °C with (a) 10% and (b) 15% of F127.