

Supporting Online Materials

Morphology Controlled Uranium Oxide Hydroxide Hydrate for Catalysis, Luminescence and SERS Studies

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Table 1. Experimental detail for the synthesis of UOHH nanoplates.

UO ₂ (acetate) ₂ .2H ₂ O (0.01 M) (ml)	Vol. of TEA(ml)	Vol. of H ₂ O(ml)	Sod. citrate (1%)(ml)	Reaction time (hrs)	Morphology of the nanoplates
1.2	0.5	1.3	-	9	Symmetrical hexagonal (Sample I, Figure 1)
1.5	0.5	1.0	-	9	Elongated hexagonal (Sample II, Figure 2)
1.2	0.7	1.1	-	48	Symmetrical hexagonal (stacked) (Sample III, Figure 4)
1.5	0.7	0.8	-	48	Elongated hexagonal (stacked) (Sample IV, Figure 5)
1.5	0.5	1.0	0.03	9	Nanoflower,(Sample V,Figure 6- A,B,C)
1.5	0.5	1.0	0.05	9	Columnar growth (Sample VI, Figure 6-D,E,F)
1.75	0.5	0.75	-	9	Symmetrical octagonal (Sample VII, Figure 7)
2.2	0.5	0.3	-	9	Elongated octagonal (Sample VIII, Figure 8)
1.75	0.5	0.75	-	72	Nanoflower (Sample IX, Figure 9)
1.75	0.7	0.55	-	48	Stacked symmetrical octagonal (Sample X, Figure 10)

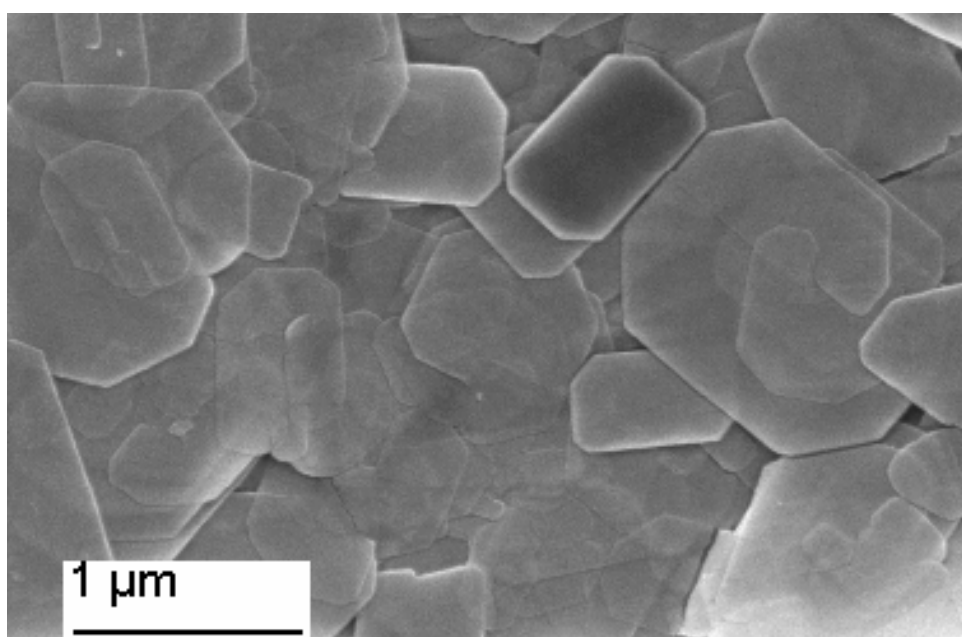


Fig. S1 FESEM images of synthesized octagonal uranium oxide hydroxide hydrate nanoplates at the initial stage (after 1 hour) of hydrolysis.

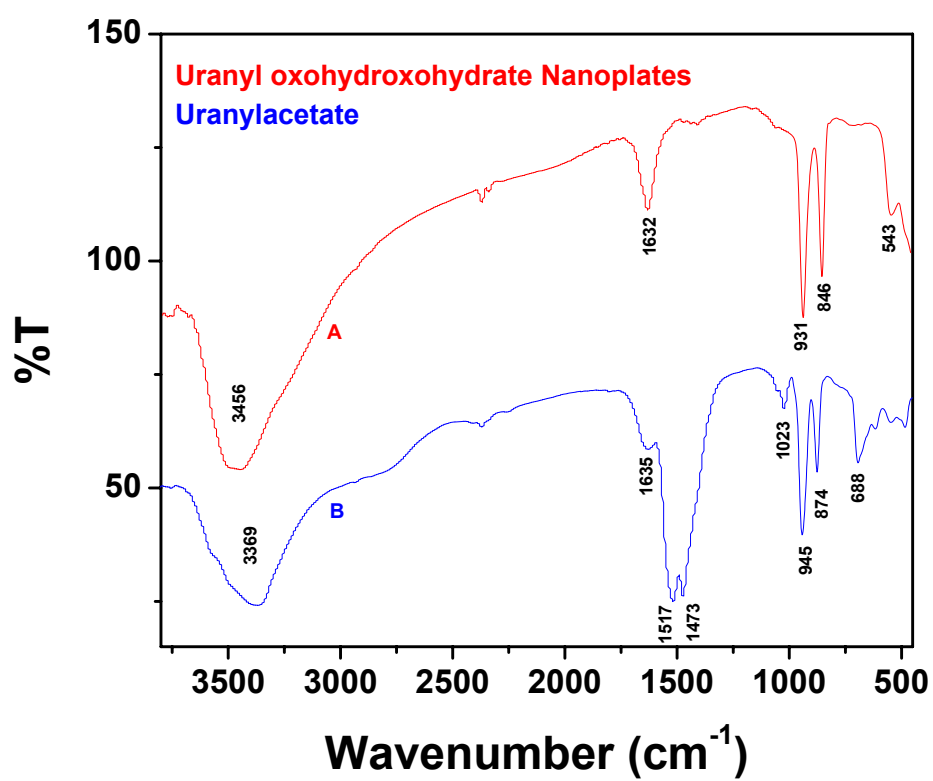


Fig. S2 (A) FTIR spectrum of uranium oxide hydroxide hydrate nanoplate. **(B)** FTIR spectrum of uranyl acetate precursor.

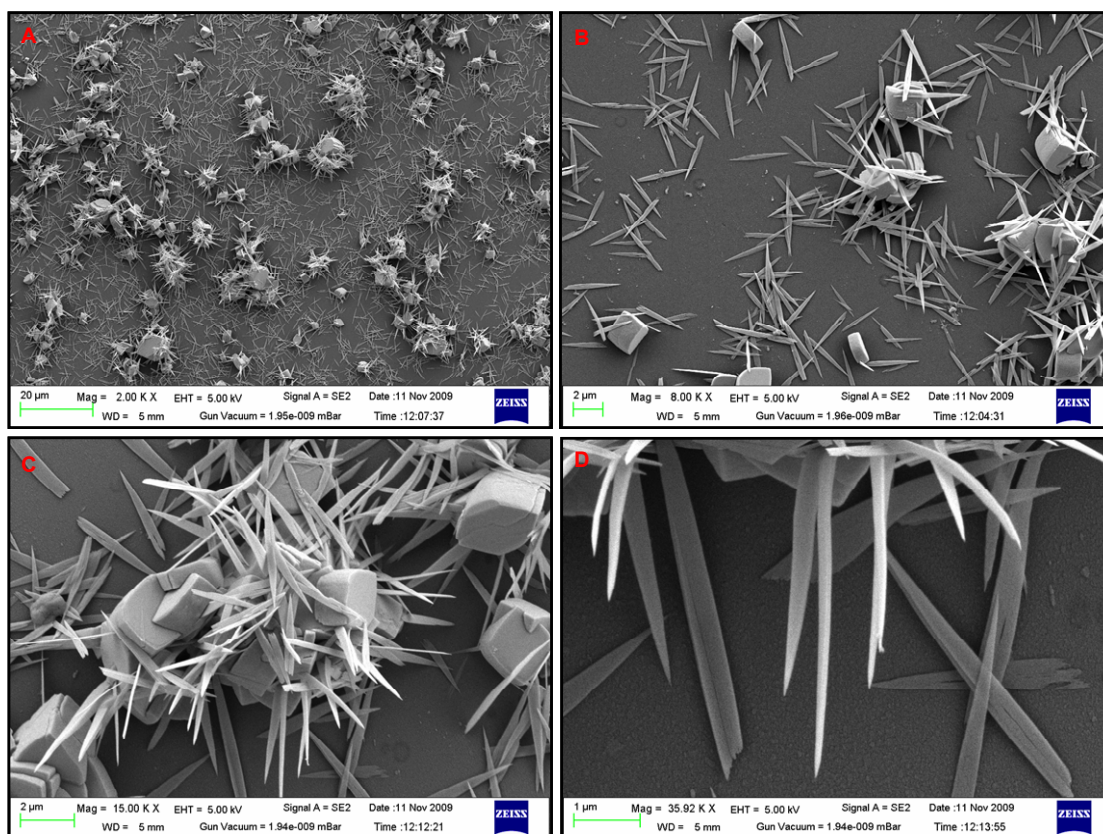


Fig. S3 (A-D) FESEM images shows nanoneedle formation from synthesized citrate induced stacked uranium oxide hydroxide hydrate nanoplate.

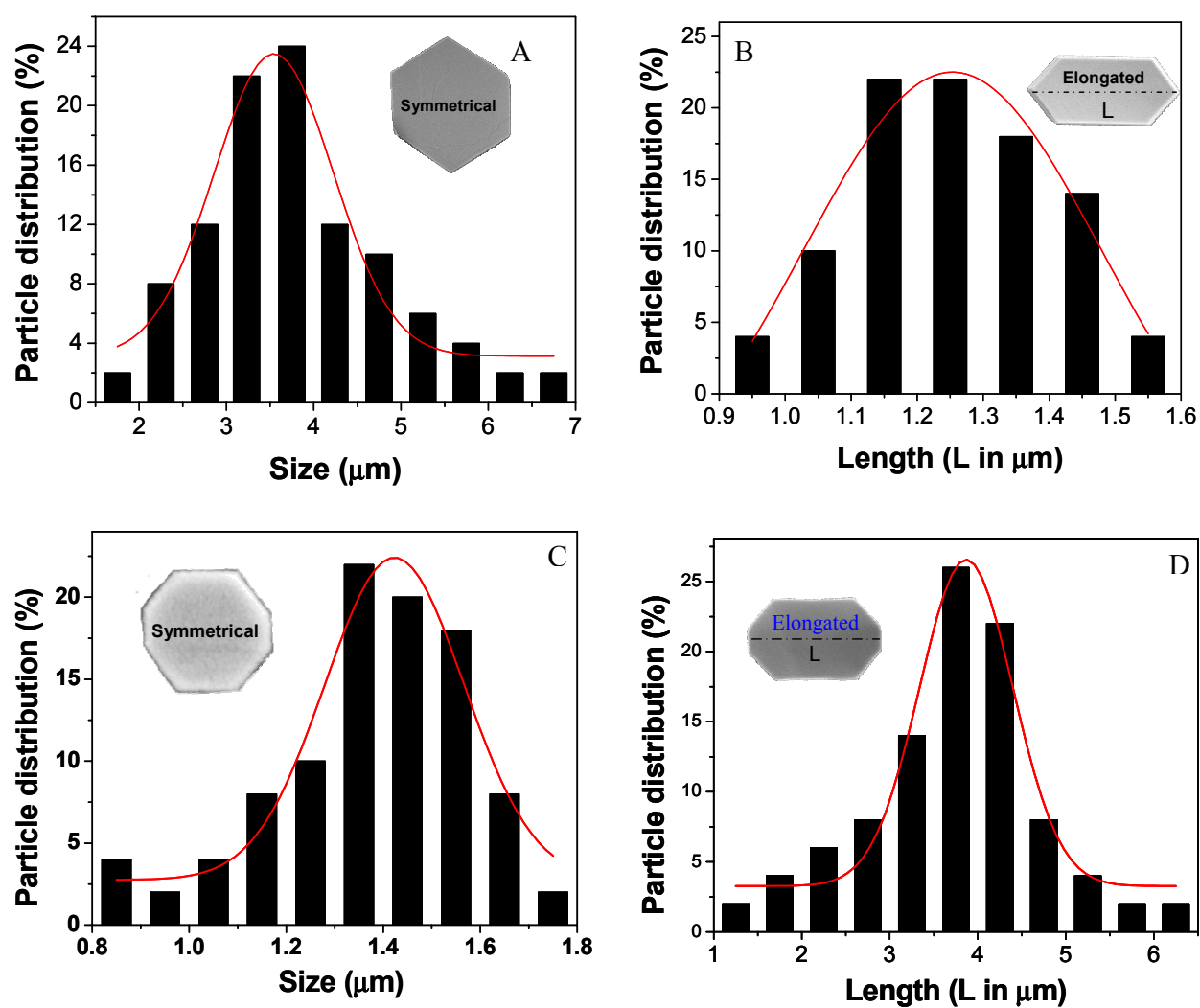


Fig. S4 Histogram showing particle distribution for hexagonal (A & B) and octagonal (C & D) nanoplates (inset showing real image).