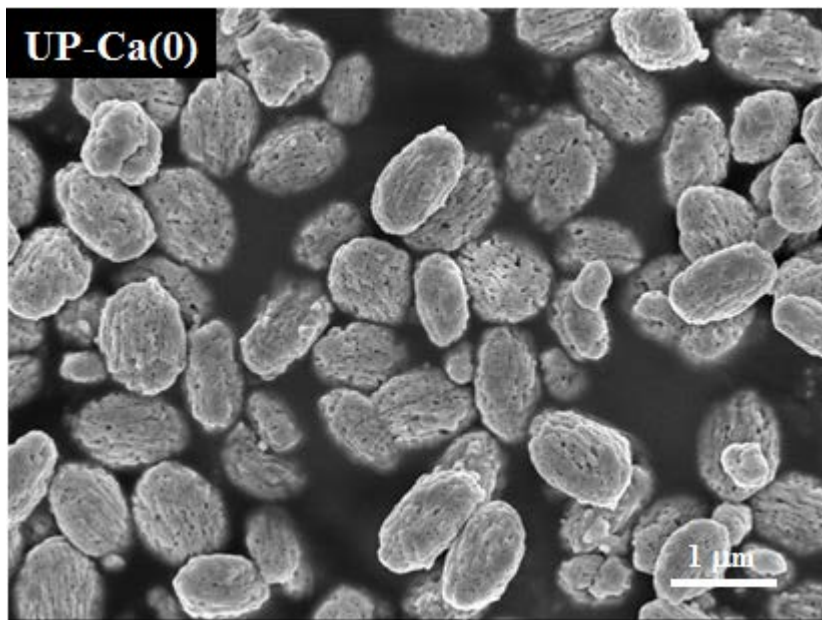
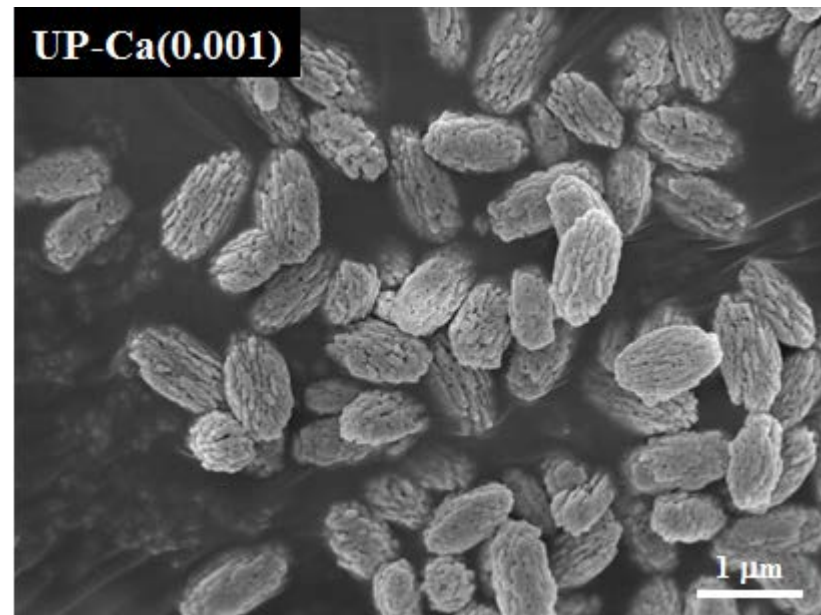


Fig. S1, XRD pattern of (a)  $\text{Ga}_2\text{O}_3(\text{UP-Ca}(0))$  and (b)  $\text{Ga}_2\text{O}_3(\text{UP-Ca}(0.001))$



(a)



(b)

Fig. S2, SEM photographs of Ga<sub>2</sub>O<sub>3</sub>(UP-Ca(0)) and Ga<sub>2</sub>O<sub>3</sub> (UP-Ca(0.001))

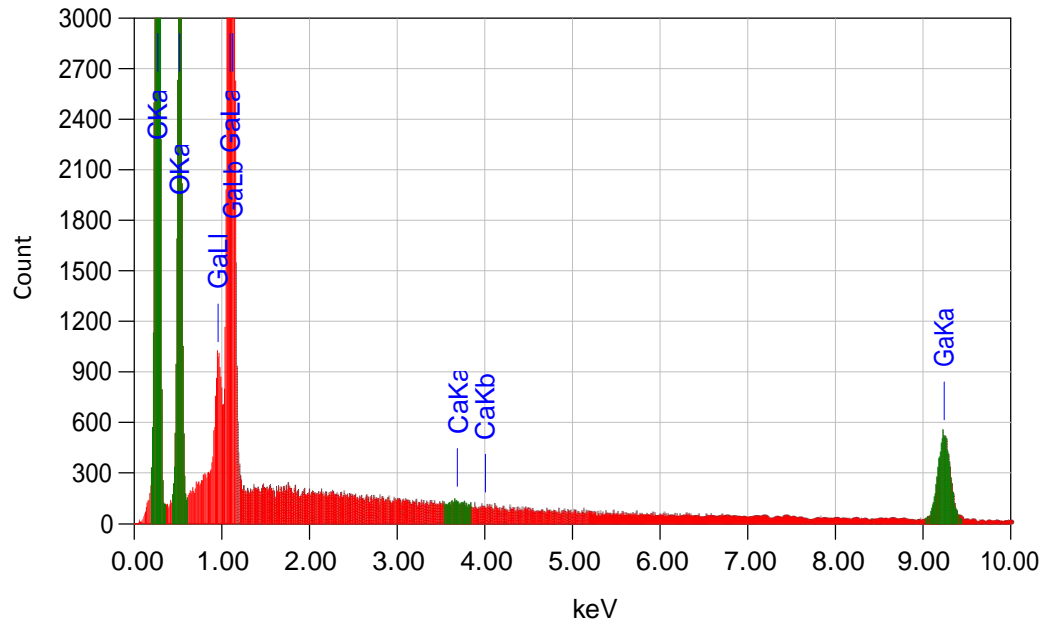


Fig. S3, Energy-dispersive X-ray emission spectrum (EDS) of Ga<sub>2</sub>O<sub>3</sub> (UP-Ca(0.001))