

Supporting Information

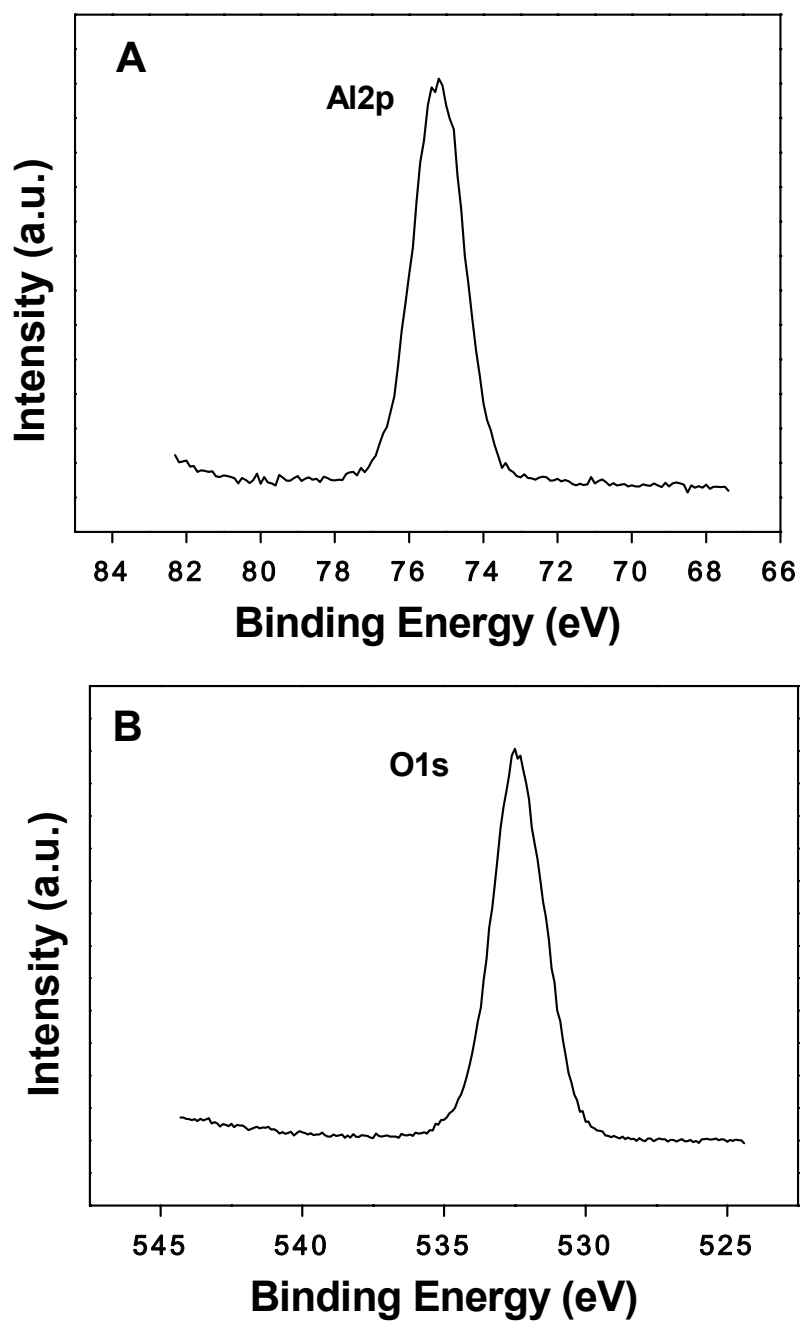


Figure S1. High-resolution XPS spectra for (A) Al2p and (B) O1s of the sample.

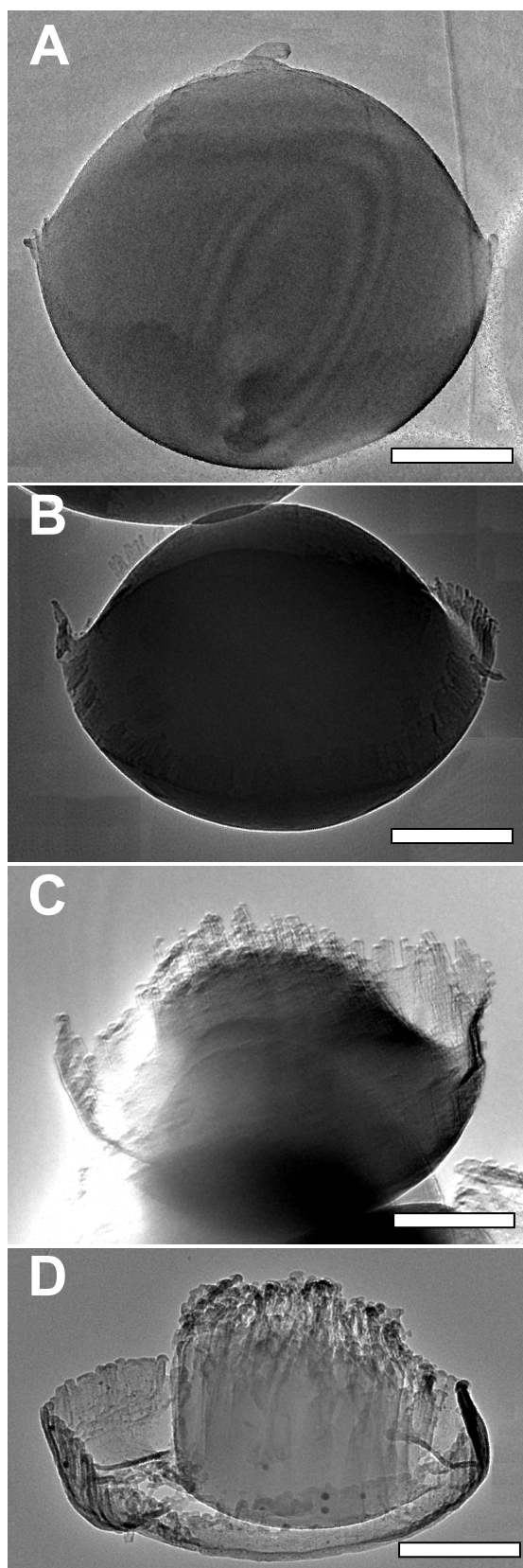


Figure S2. TEM images of samples obtained with Ar pressure of 0.06 Pa and with different deposition times. (A) 10 min. (B) 25 min. (C) 60 min. (D) 120 min. The scale bar is 200 nm.

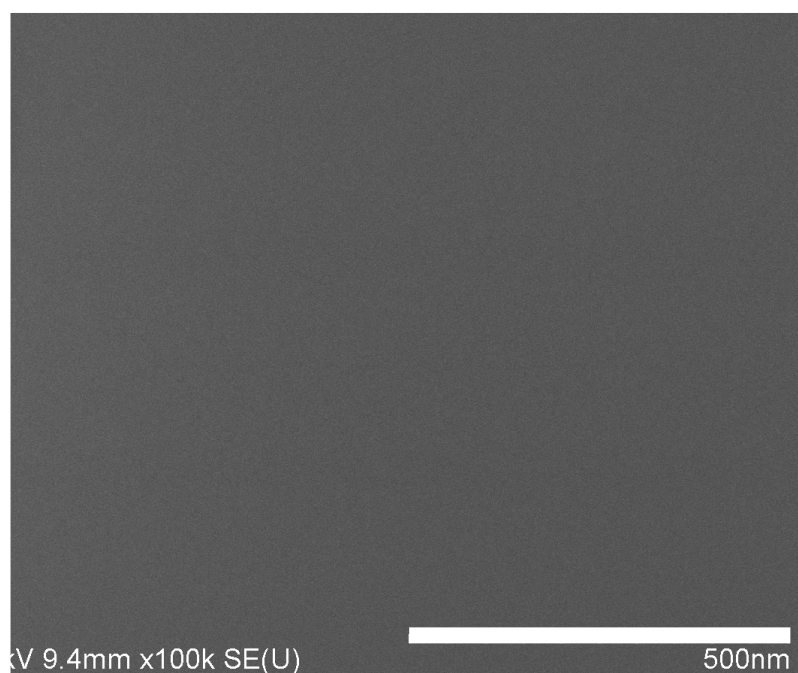
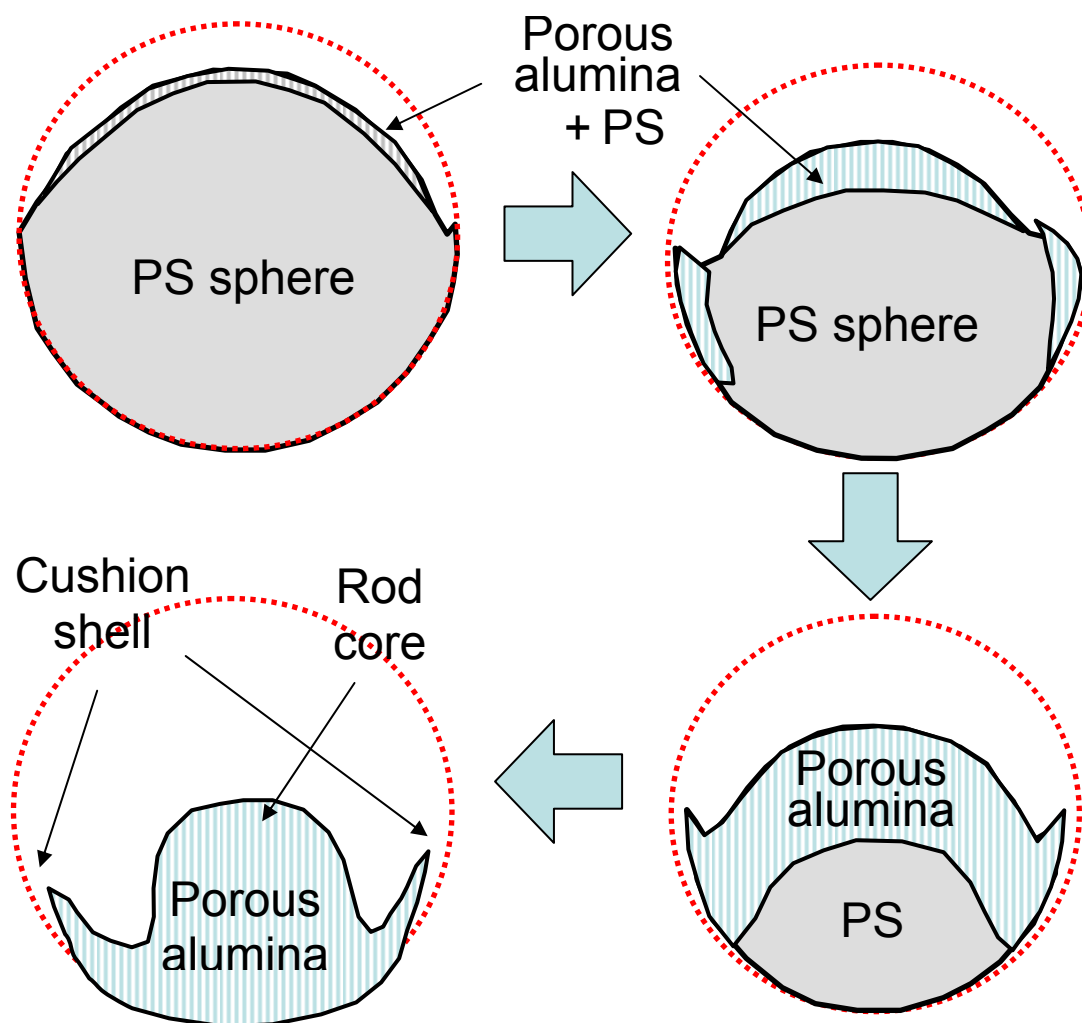


Figure S3. FESEM images of sputtered alumina deposit without PS template under the same sputtering condition as for Figure 2. The scale bar is 500 nm. Very flat surface without any structure is obtained.



Scheme S1. Schematic illustration of the formation process of unique hncp hierarchical structure.

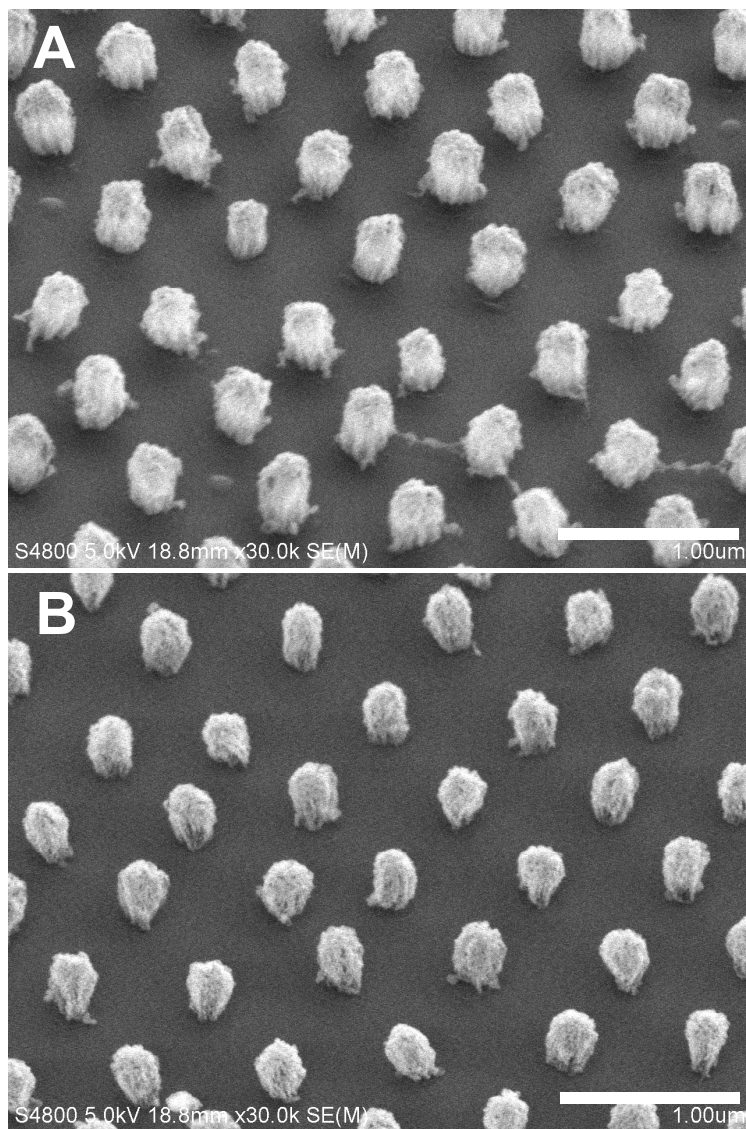


Figure S4. FESEM images of a sample obtained by sputtering using a PS colloidal monolayer as the substrate at Ar pressures of (A) 0.133 Pa and (B) 6.66 Pa (PS sphere size 750 nm; deposition time 2 h). These images are observed with a tilt angle of 45°. The scale bar is 1 μm .

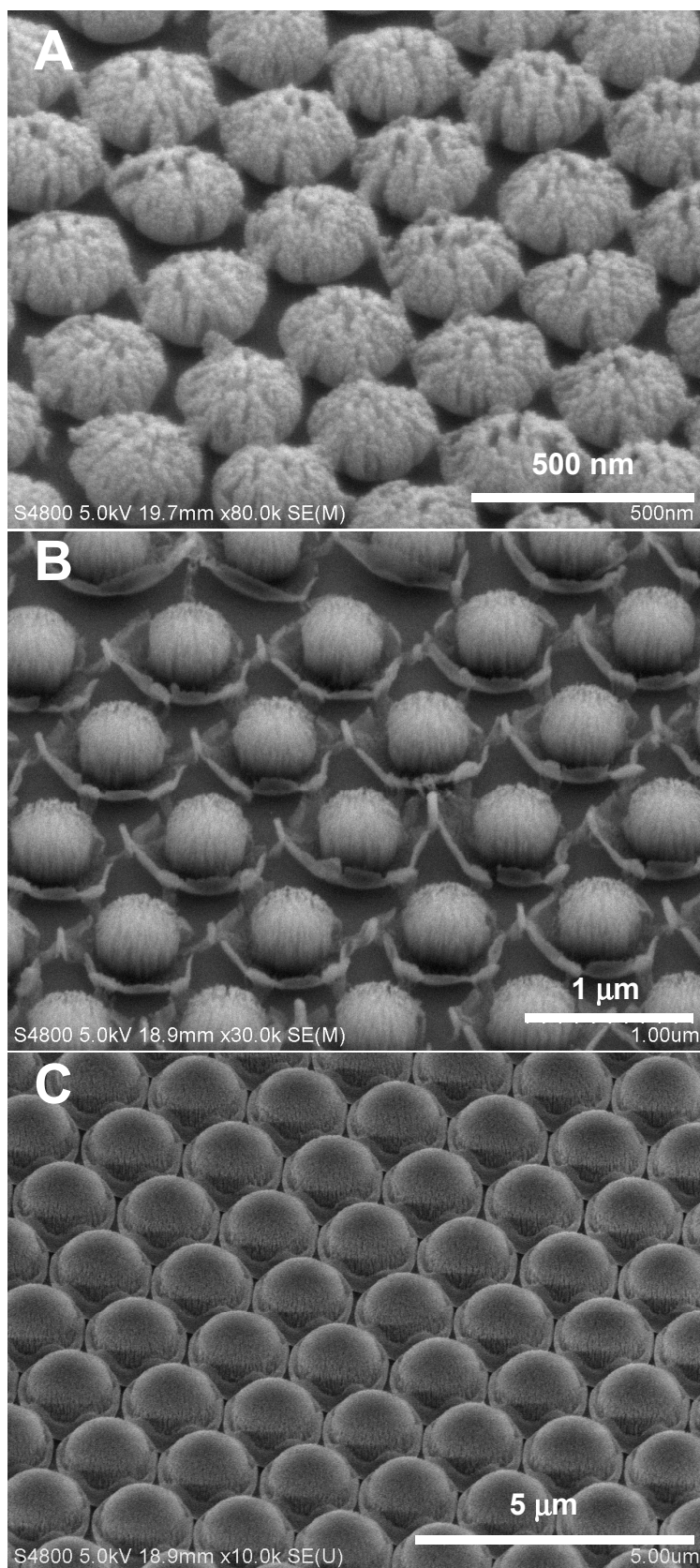


Figure S5. FESEM images of a sample obtained by sputtering using a PS colloidal monolayer template with different PS sphere sizes at 0.06 Pa. (A) 350 nm. (B) 1 μm. (C) 2 μm.

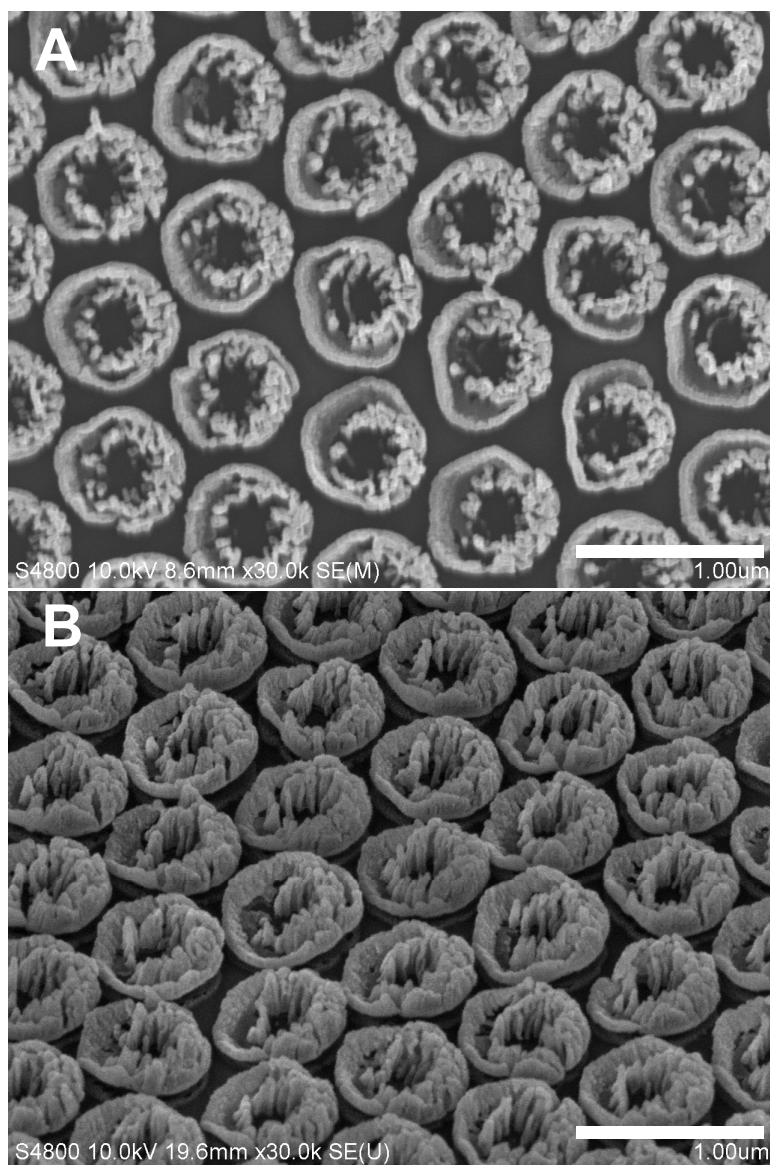


Figure S6. FESEM images of periodic Au/Al₂O₃ nanocomposite arrays obtained by co-sputtering multiple targets consisting of an Al₂O₃ target and Au sheets and using a PS colloidal monolayer as the substrate (PS sphere size 750 nm; deposition time 2 h). (A) Image observed from the top. (B) Image with a tilt angle of 45°. The scale bar is 1 μm.