Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Plasma-assisted Electrolytic Synthesis of $In(OH)_3$ Nanocubes Thermally Transformed into In_2O_3 Nanocubes with a Controllable Sn Content

Tae Hyung Kim, † Nu Si A Eom,† Sung-Oong Kang,*,† Yong-Ho Choa*,†

† *Department of Fusion Chemical Engineering, Hanyang University, Ansan 426 – 791, Republic of Korea*

*Corresponding Author

Yong-Ho Choa

E-mail address: choa15@hanyang.ac.kr

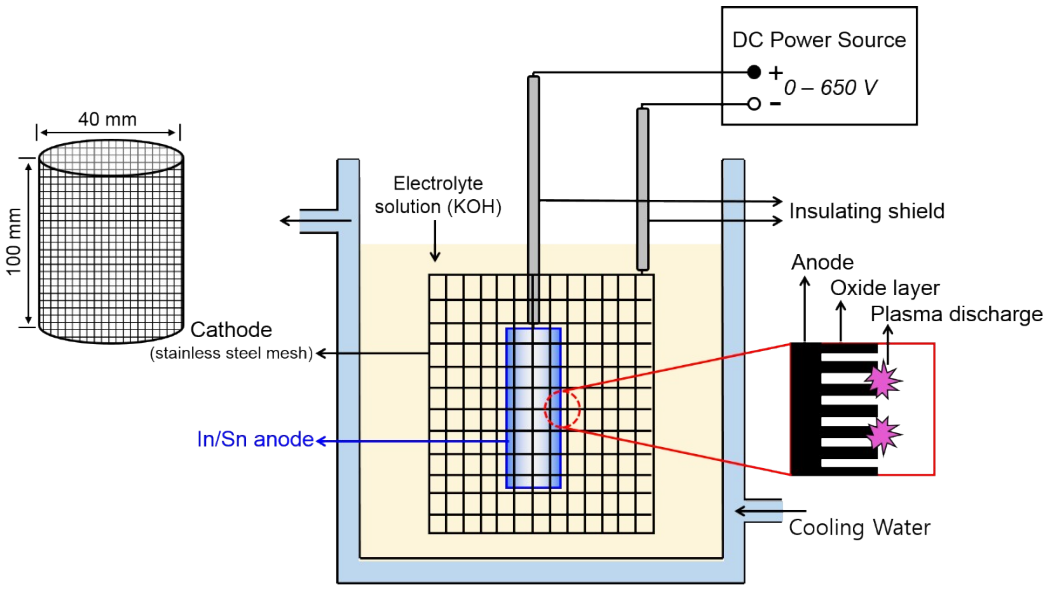

Figure S1. A schematic illustration of plasma-assisted electrolysis synthetic system

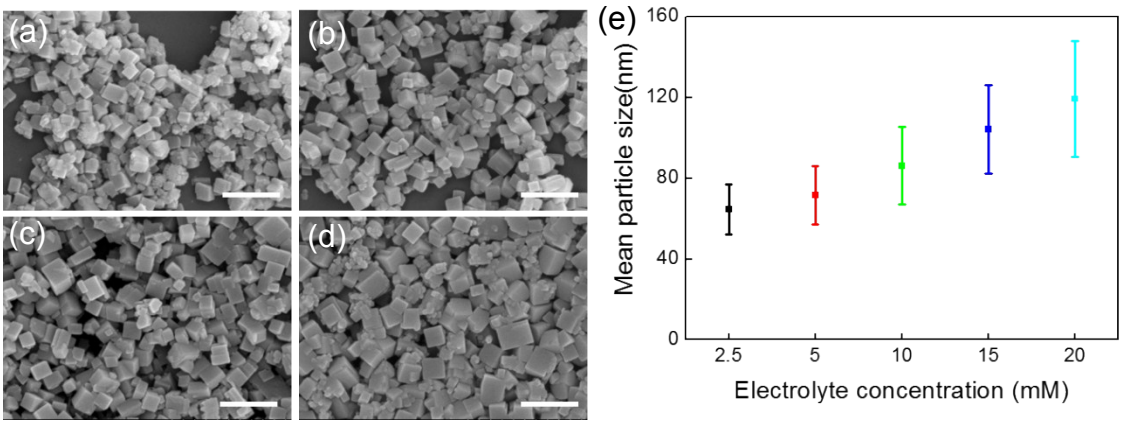

Figure S2. The SEM observations of $In(OH)_3$ nanocubes synthesized from the In/Sn alloy with the 15 wt.% content of Sn in the variable electrolyte concentration of (a) 2.5 mM, (b) 5 mM, (c) 15 mM and (d) 25 mM, respectively. (e) The size-dependence of $In(OH)_3$ nanocubes on the electrolyte concentration.

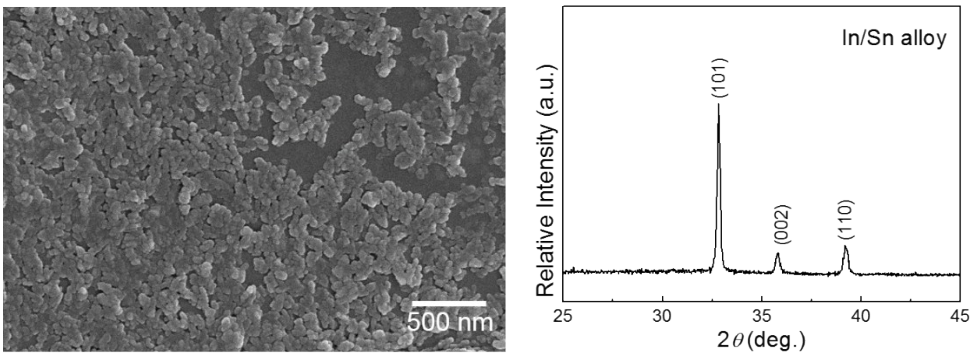

Figure S3. (a) The SEM image of nanoparticles precipitated by reducing the electrolyte solution prepared through the plasma-assisted electrolytic process of In/Sn alloy anode with the Sn content of 5 wt.% in the acidic solution of 10 mM H_2SO_4. (b) The XRD pattern of precipitated nanoparticles indexed to the body-centered tetragonal In (JCPDS card. No 85-1409).

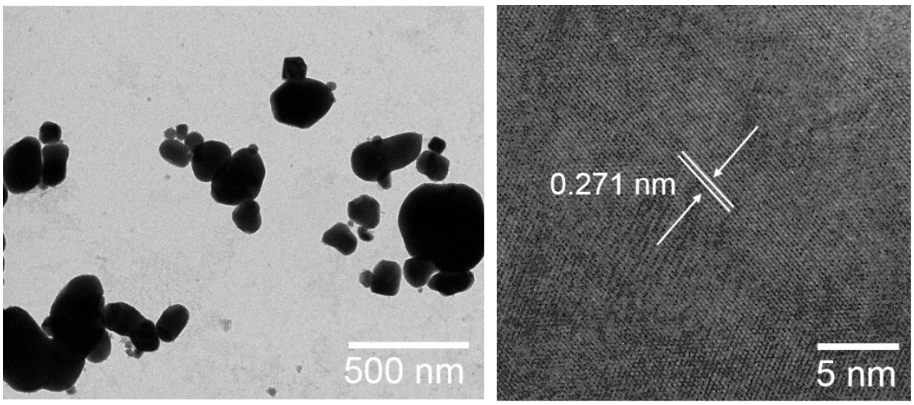

Figure S4. The TEM image represents the polyhedron morphology of In/Sn alloy nanoparticles prepared through the plasma-assisted electrolytic process of In/Sn alloy anode with the Sn content of 5 wt.% in the acidic solution of 10 mM H_2SO_4. (b) The microstructure observed using HRTEM shows the well-aligned lattice fringes with the interlayer spacing of 0.271 nm corresponding to the (101) plane of body-centered tetragonal In.

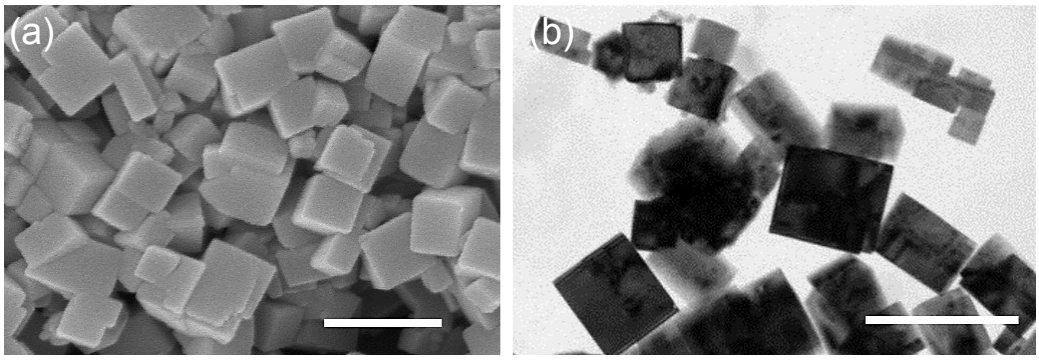

Figure S5. Magnified SEM and TEM images of $In(OH)_3$ nanocubes prepared with the electrolyte concentration of 10 mM. The small nanorods/cubes attached on the surface of as-grown large-sized nanocubes indicates the oriented attachment mechanism for the growth of cube-shaped morphology of $In(OH)_3$ nanocubes in our plasma-assisted electrolytic synthesis. The scale bar is 200 nm.