Formation and application of various zinc-based nanostructures by reacting ZnO with metal cations

유태경†, 정지용, 이재영
경희대학교
(tkyu@khu.ac.kr†)

Zinc (Zn)-based nanostructures including metal organic frame works, metal oxide alloys, and layered double hydroxides (LDH) can be used for various application areas such as electrochemical catalysts and metal ion carriers for biomedical treatment. In typical synthesis of zinc-based nanomaterials, there have been various by-products including ZnO and metal oxide or the reaction needs to be carried out in the N2 or other inert gas atmosphere to prevent the formation of oxide by-products. In this presentation, we report a new simple route for formation of various zinc-based nanostructures such as thin ZnO layer, Zn-metal alloy oxide nanoparticles, and Zn-based LDH nanoplates. By reacting ZnO with metal cations in an aqueous solution, we could easily prepare various Zn-based nanostructures. We also show various applications using the synthesized Zn-based nanostructures, for example, membranes for gas separation, electrochemical catalysts for hydrogen evolution reaction, and metal ion carriers for biomedical treatment.