

Ecotoxicity Evaluation and Suggestion of Remediation Method of ZnO Nanoparticles in Aqueous Phase

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Abstract : We investigated ecotoxicity and performed an experiment for removing ZnO nanoparticles in water. Short-term exposure of hatching test using fertilized eggs (*O. latipes*) showed deformity in 5 ppm of ZnO nanoparticles solution, and in 10ppm ZnO nanoparticles solution delayed hatching was observed. Herein, chemical precipitation method was suggested for removing ZnO nanoparticles in water. The precipitated ZnO nanoparticles showed the form of ZnS after addition of Na₂S, and the form of Zn₃(PO₄)₂ for Na₂HPO₄. The removal efficiency of ZnO nanoparticles in water was closed to 100% for two case. In ecotoxicity evaluation of as-precipitated ZnS and Zn₃(PO₄)₂, they did not cause any acute toxicity for *D. magna*. It is noted that this precipitation treatment of ZnO is effective to reduce the potential cytotoxicity.

Keywords : ZnO nanoprticles, ZnS, Zn₃(PO₄)₂, ecotoxicity evaluation, chemical precipitation

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