

Continuous preparation of Sn doped ZnO in a micro drop/bubble fluidized reactor

유동준, 이승호, 양시우, 임대호, 신승훈, 송기용, 이찬기¹,

강형구², 강 용[†]

충남대학교; ¹고등기술연구원; ²Gentec.

(kangyong@cnu.ac.kr[†])

The micro drop/bubble reactor has been developed to increase the production efficiency of ZnO and Sn doped ZnO powder continuously and effectively. Effects of flow rates of micro drops and bubbles, reaction temperature, Zn²⁺ concentration in the precursor solution, ratio of Sn/Zn ions and kinds of precursor solution on the characteristics of as-prepared ZnO and ZnO:Sn powders and on the production efficiency were investigated. The XRD analysis of as-prepared ZnO and ZnO:Sn confirmed that mainly single crystal structures were formed regardless of Sn doping level, indicating that no significant impurities were formed. The crystallite size of ZnO:Sn decreased with increasing the amount of Sn dopant. The Surface morphology as well as lattice microstructure of as-prepared powders could be modified by doping of Sn⁴⁺ into ZnO lattice. The powders were spherical and porous with uniform concentration and size distribution. It was found that the production efficiency of as-prepared powders increased considerably by adjusting the flow rates of micro drops and bubbles in the reactor.