# Development of a micro drop fluidized reactor for preparation highly porous Sn doped ZnO powders

임대호, 오진경, 이찬기[1], 최보경, 강 용*
충남대학교; [1]고등기술연구원
(kangyong@cnu.ac.kr*)

Highly porous and nanostructured Sn doped ZnO powders were prepared in a micro drop fluidized reactor(MDFR), for the development of semiconductor type gas sensor. The MDFR could improve the production efficiency of as-designed powders by adjusting reaction conditions. The performance of a MDFR for preparation highly porous and nanostructured ZnO:Sn powders was discussed in view of the efficiency of reaction and quality of as-prepared powders. The ratio of Zn and Sn in the precursor solutions could be maintained in the as-prepared powders. The donor of Sn was successfully doped into the host lattice of ZnO which could produce the electron defects in order to increase the influence of oxygen partial pressure on conductivity of powders. It was revealed that the change of electron configuration of ZnO by doping Sn was one of the key effects to increase the sensitivity for gas sensing. The size of prepared powders was reduced effectively and the porosity and effective surface area of as-prepared powders were enhanced tremendously by using the polymeric precursor solutions. The SEM analysis indicated that the unique and effective surface morphology for contacting and sensing gases could be realized by using the continuous MDFR.