

### Preparation of zinc oxide fine particles with high crystallinity by using various supercritical fluids

오광석, 이창하<sup>1</sup>, 임종성<sup>2</sup>, 이윤우<sup>3,\*</sup>  
한국과학기술연구원; <sup>1</sup>연세대학교; <sup>2</sup>서강대학교;  
<sup>3</sup>서울대학교  
(ywlee@snu.ac.kr\*)

Zinc oxide is one of the important ceramic materials, and has been found to have several applications in electronic devices such as gas sensors, varistor, and transducers. Synthesis of Zinc oxide particle using supercritical water is known to be superior to the other methods from the view point of energy conservation because this method is operated for a short time at comparatively low temperature (350~450 °C). In this work, we could prepare zinc oxide fine particles with high crystallinity by using various supercritical fluids, such as water and methanol. Zinc oxide particle formed with these supercritical fluids has the size below 100 ~ 300 nm. Especially, The morphology of Zinc oxide synthesized with supercritical methanol is spherical, while that of zinc oxide with supercritical water is rod-like. According to Thermogravimetric Analysis, the Zinc oxide prepared with supercritical methanol has hydrophobic surface. Also, we try to find out effects of initial Zinc nitrate solution concentration and density of solvent.