

NT-P004

Fabrication of CuZn Nanofibers by Electrospinning Method

최아름, 박주연, 정은강, 강용철*

부경대학교 화학과

Copper and zinc are well known elements with antibacterial effect. So in this research, Cu and Zn (CZ) nanofibers (NFs) were fabricated by electrospinning method using polyvinylpyrrolidone (PVP) for adjusting viscosity. The CZ/PVP precursor solutions were prepared with copper sulfate pentahydrate, and zinc acetate dihydrate. Distilled water was used for solvent and PVP was used to regulate the viscosity of precursor solution. The CZ/PVP NF composites were obtained by electrospinning method using the precursor solution. The average diameter of obtained CZ/PVP NFs was determined by optical microscopy using Motic image plus 2.0 program and was found to be 490 nm. The chemical environment of the obtained CZ/PVP NF composites was investigated with X-ray photoelectron spectroscopy (XPS). After heating the obtained CZ/PVP NF composites at 353 K, the solvent was removed. The characteristic C 1s, Cu 2p, and Zn 2p core level XPS peaks were observed. After calcination the CZ/PVP NF composites at 873 K in Ar environment for 5 hrs, PVP was decomposed at this temperature and CZ NF was obtained. This was confirmed by decreasing the intensity of C 1s.

Keywords: CuZn, Electrospinning, X-ray photoelectron spectroscopy (XPS)

NT-P005

Synthesis and characterization of noble metal coupled N-TiO₂ nanoparticles

Kyusang Lee, Jiyeon Moon, Seonmin Kim

전자부품연구원, 에너지나노소재연구센터

Volatile organic compounds (VOCs) in the atmosphere are harmful materials which influence indoor air environment and human health. Titanium dioxide (TiO₂) is photocatalyst extensively used in degradation of organic compound. To improve the photocatalytic activity in the visible light region, doping with non-metals element or loading noble metals on the surface of TiO₂ is generally proposed. In this study, N- doped TiO₂ having photocatalytic activity in visible light region was attached noble metal such as Pt, Ag, Pd, Au by coupling method. Catalytic activities of Noble metal coupled N-TiO₂ powders were evaluated by the improvement of their photocatalytic activities and the degradation of VOC gas. A UV-Vis spectrophotometer was used to measure the diffuse reflectance spectra of coupled N-TiO₂ sample. The photocatalytic activities of as prepared samples were characterized by the decoloration of aqueous MB solution under Xenon light source (UV and visible light). To measure of decomposition VOCs, ethylbenzene was selected for target VOC material and the concentration was monitored under UVLED irradiation in a closed chamber system. Adjusting the initial concentration of 10~12 ppm, to evaluate the removal characteristics by using the coupled N-TiO₂.

Keywords: TiO₂, N-TiO₂, coupled N-TiO₂, VOC