

Synthesis of CuO Nanoparticles and Its Ink-Formulation: Controlled Uniform Pattern Line via Ink-Jet Printing

Mohammad Vaseem, 이길목, 한윤봉*
전북대학교
(ybhahn@jbnu.ac.kr*)

Copper oxide (CuO) nanoparticles with a size of 5-8 nm have been synthesized by simple solution process. The as-synthesized CuO nanoparticles were further characterized in details by its structural and optical characterization. The estimated band gap of as-synthesized CuO nanoparticles observed as 1.78 eV at room temperature by UV-DRS analysis. Moreover, as-synthesized CuO nanoparticles were successfully formulated as an ink using mixed solvents of water, ethanol, iso-propanol and diethylene glycol with varying wt % of CuO nanoparticles. As-formulated ink samples were further Ink-jetted to make uniform pattern lines on Si/SiO₂ substrate. It is observed that concentration of CuO nanoparticles in as-formulated inks are very important to produce uniform pattern line with smooth edge definition. Moreover, investigation related to number of over-printing layers on top of each other has also been done to control the thickness of as-printed pattern lines.