In this study, characteristics of indium-tin-oxide (ITO) nanoparticles recovered from TFT-LCD panel scraps were investigated. The ITO was well separated from TFT-LCD panel scraps by dissolving color filter layer, which had been located between the ITO thin film layer and the glass substrate. Then, the solution was filtered to distinguish ITO from color filter component, and the filtered ITO was dissolved in the acid solution. The dissolved ITO was precipitated as nanoparticles by using reduction method with ammonia hydroxide and dispersing agent. The precipitated particles were heat-treated at 500°C to crystallize. HRTEM and XRD analysis revealed that the particle size is 20 nm and was well crystallized to (222) preferred orientation. As well, the recovered ITO nanoparticles were uniformly dispersed in the ethanol based solutions to formulate ITO ink. The ITO ink coated layer on glass followed by heat-treatment at 600°C showed similar properties compared with one made by newly synthesized ITO nanoparticles.

Key words: Recovery, ITO, Nanoparticle, TFT-LCD panel, Scrap, Dispersion, Ink

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