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### Recovery of indium from waste liquid crystal display (LCD) panels

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A three-step, batch type recovery method was developed to produce indium powders from dilute indium chloride solutions prepared by dissolving indium tin oxide (ITO) electrodes from waste liquid crystal display (LCD) panels in concentrated hydrochloric acid (HCl) solutions. A 5-L batch process was used with individual experimental parameters for cementation, such as temperature and time, which were varied to optimize their effects on the physicochemical properties and purity of the recovered indium powders and the recovery rate. A validation experiment was performed by preparing indium bearing solutions in a 5-180 min kinetic study of indium cementation with aluminum in aqueous HCl solutions at 65°C. The indium powders obtained from the cementation processes were further characterized using various analytical tools, such as ICP/AES, X-ray diffraction (XRD), and scanning electron microscope-energy dispersive X-ray spectroscopy (SEM-EDS). Cementation at 60°C for 10 min resulted in the optimal process efficiency, with a recovery rate and indium purity of 70 and 99.8% respectively.

#### Biography

Kyung-Soo Park received his PhD from the Department of Advanced Materials Science and Engineering of Korea University in 2011. Now he is a senior research scientist in Institute for Advanced Engineering (IAE). His research interest includes recycling of e-waste and waste glass. Chan Gi Lee received Doctoral degree at Kyushu University in 2009. He was Post-Doctoral Fellow in Micro-space Chemistry Solution team, Measurement Solution Research Center (MSRC), National Institute of Advanced Industrial Science and Technology (AIST), Japan. Now he is a principal research engineer in Institute for Advanced Engineering (IAE). His research interests include synthesis of nanomaterials and material recycling.

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