Spectroscopic characteristics of Cu_2O nanoparticle and their sintering properties

Huseung Lee
Chungnam National University, South Korea

Statement of the Problem: Recently, processes for manufacturing of various electronic device using nanoparticles are being developed with the spread of smart devices and the related market expanding. This is significant not only in terms of increasing the price competitiveness of the process by replacing the existing process, such as vacuum deposition and lithography process but lowering the product cost and expanding the application field of electronic devices by applying the nanoparticle sintering process to the flexible substrate. In this study, the laser sintering of nanoparticles was studied as part of the alternative process development of the conventional process. In this study, the process improves the reliability of the laser sintering process by evaluating the laser sintering characteristics of nanoparticles according to the chemical composition change of the nanoparticle solution. The configuration for the experiment is shown in Fig. 1. Infrared wavelength laser is irradiated through the scanner onto the nanoparticle solution coated on the substrate. The changes in the process stability depending on the condition of the laser to be irradiated and the blending state of the nanoparticle solution was observed through experiments and analysis. As a result, it was confirmed that the higher the concentration of the nanoparticles, the same ratio of the nanoparticles to the reducing agent, and the larger the molecular weight of the reducing agent, the more stable the process.

Biography

Huseung Lee has expertise in nanoparticle laser sintering. In addition to nanoparticle synthesis and spectroscopic analysis technology, he has expertise in analytical techniques for laser sintering characteristics according to material properties. He was responsible for the design of laser sintering equipment in the Korea Institute of Machinery and Materials and is currently conducting laser sintering research based on material properties.

liber@cnu.ac.kr