

---

Fabrication of flexible Ag circuit at low temperature using Intense pulsed light energy

SangWoo Kim <sup>1</sup>, JongWoong Kim <sup>2</sup>, Dong-Gun Kam <sup>3</sup>, and SeungBoo Jung <sup>1</sup>

<sup>1</sup>Sungkyunkwan Univ., Korea, Republic of

<sup>2</sup>Chonbuk National University, Korea, Republic of

<sup>3</sup>Ajou University, Korea, Republic of

The sintering of various metallic nanoparticle pastes in the field of flexible electronics has been studied in recent years extensively using different materials and sintering techniques. Conventional Infra-Red (IR) sintering technique generally requires high temperature and long process times to sinter the metallic nanoparticles. But high temperature process lead to thermal degradation to polymer-based flexible substrates due to their low melting point.

In this contribution, we designed the intense pulsed light (IPL) sintering process to solve this drawback and measured the electrical performance of a screen-printed Ag nano-circuit with various IPL conditions. Different pulse power and pulse time (duration) were used to set the optimum conditions of IPL energy source. Fabricated circuits were sintered with different IPL energy conditions and measure their electrical resistivity by using the 4-point probe method. The IPL-sintered Ag circuit had a lower resistivity, which is low enough to be used for flexible electronics. Sliding test was used to evaluate the flexibility of the circuit under various IPL conditions.