
Optimization of UV-LED Sintering in best conditions of Silver Nanoparticles ink

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In recent printed electronics technology, instead of thermal process with a long time and high temperature for sintering materials, Photo-sintering technique using light source has attracted attention. Photo-sintering key principle is the selective heating of the thin film with strong absorption property, while the transparent substrate does not heat by light source. In recent Photo-sintering, many research have used the flash lamp as light source, and investigated the effect of flashing frequency and light intensity depending on the materials. However, the effect corresponding to single wavelength of light has not been researched yet. In this paper, a sintering process for silver nanoparticles was investigated using UV-LED. 100 nm size silver nanoparticles in ink was bar coated to 1 x 1 cm on Glass and photo-sintered in order to optimize electrical performance using 385nm UV-LED module. Using optimized UV-LED Photo-sintering conditions, a sheet resistance value as low as 0.4 Ω/sq for 1 min at 270W of output power at 385nm was achieved.