



ICSM 2010

INTERNATIONAL CONFERENCE ON
SCIENCE AND TECHNOLOGY OF
SYNTHETIC METALS 2010

KYOTO, JAPAN

JULY 4-9, 2010

ABSTRACT BOOK

Evolution of Optical and Structural Properties of Organic Perylene Nanoparticles

E. H. Cho¹, M. S. Kim¹, D. H. Park¹, D. C. Kim², J. Kim², J. Joo*¹

¹Department of Physics, Korea University, Seoul 136-713, Korea,
*email: jjoo@korea.ac.kr

²Department of Physics, Incheon University, Incheon 406-772,
Korea

Light-emitting perylene nanoparticles (NPs) were fabricated by using reprecipitation method, and they were treated with hydrothermal process. The hydrothermal temperatures for the perylene NPs varied from 110 °C to 180 °C, and their optical and structural properties were investigated using UV/Vis absorption, PL, SEM, HR-TEM, and XRD experiments. We performed dynamic light scattering (DLS) experiments for measuring size of perylene NPs. The UV/Vis absorption peaks of the perylene NPs could be controlled from 420 nm to 560 nm through the hydrothermal temperatures. We observed the three types of light emission for perylene NPs using laser confocal microscope; free exciton emission at 480 nm, self-trapped exciton emission at 600 nm, and partially self-trapped exciton emission at 520 nm. The evolution of optical properties of the hydrothermal treated perylene NPs can be analyzed in terms of structural variation. The perylene NPs were blended with PEDOT/PSS solution for optoelectronic devices, and their performance was investigated.