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## Film Coating and Micro - Patterning Process of Nano-particle Conductive Ink System by Using ESD Method

양종원, 조상현, 신나리, 김진열<sup>†</sup>

국민대학교 신소재공학과  
(jinyeol@kookmin.ac.kr<sup>†</sup>)

본 연구에서는 non-contact deposition method의 일환인 ESD (electrostatic deposition)의 박막공정을 이용하여 Conductive layer 위에 Gold nanoparticles 및 Silver nanoparticles 등 organic/inorganic nano particle conductive ink system의 단분산 2D 박막을 제조를 연구하였다. ESD head를 통해 여러가지 organic / inorganic nano particle conductive ink system을 Deposition하였으며 분산도가 높고 균일한 단분산의 2차원 박막 구조를 얻을 수 있었으며, 전도성 PEDOT과의 Hybridization을 통해 균일상의 표면 Morphology를 갖는 고 전도성 투명 필름을 제작하였다. ESD technique를 이용하는 박막공정 기술은 나노입자 및 나노구조물의 박막화·패턴화를 포함하는 새로운 Deposition 기술로써 이를 응용하여 금속 나노입자의 2차원의 패턴화된 박막 구현을 통해 유기반도체 및 전자소자에의 응용성을 증거할 수 있었다.

**Keywords:** ESD, Nano particle conductive ink system, Micro-patternig

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## Iodine Doping of Pentacene and its Electrical Properties

Abdur Rahim, Young-Kyu Lee, Chiyoung Lee, Jaegab Lee<sup>†</sup>

School of Advanced Material Engineering, Kookmin University  
(lgab@kookmin.ac.kr<sup>†</sup>)

Organic thin film transistors (OTFTs) have been attracting considerable attention because of their potential use in low-cost, large area, electronic devices such as flexible displays, biochemical sensors, and smart cards. In past several years, gold/pentacene has been frequently used in OTFTs because of the high mobility of pentacene and the high work function of gold. To improve the performance of the OTFTs contact area doping of pentacene with p-doping materials are well known. In this work we demonstrated selectively contact area doping of pentacene with Iodine vapor. For effective doping elevated pentacene layer under the source-drain area was deposited and exposed to Iodine vapor. We got better electrical performance for elevated pentacene structure rather than planer structure with relatively high field-effect mobility.

**Keywords:** Iodine, Pentacene, Field-effect mobility, OTFTs