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Functional Inks for Printed Electronics

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In recent years, the functional inks for printed electronics that can be combined with a variety of printing techniques have attracted increasingly significant interest for use in low cost, large area, high performance integrated electronics and microelectronics. In particular, the development of solution-processable conductor, semiconductor and insulator materials is of great importance as such materials have decisive impacts on the electrical performance of various electronic devices, and, therefore, need to meet various requirements including solution processability, high electrical performance, and environmental stability. Semiconductor inks such as IGO, CIGS are synthesized by chemical solution method and microwave reaction method for TFT and solar cell application. Fine circuit pattern with high conductivity, which is valuable for flexible electrode for PCB and TSP devices, can be printed with highly concentrated and stabilized conductor inks such as silver and copper. Solution processed insulator such as polyimide derivatives can be use to all printed TFT device. Our research results of functional inks for printed electronics provide a recent trends and issues on this area.

Keywords: Functional ink, Semiconductor, Conductor, Insulator

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One-dimensional nanowires (NW)/nanorods are under intense investigation in materials science due to their potential applications in many electronic devices. Since the properties required for these applications are greatly influenced by their microscopic structures, it is important to understand the relation between the microstructures with their optical and electric properties. In this study, Ag nanowires were synthesized in various dimensions and coated onto PET films to form transparent electrode. Their optical and electrical properties were studied in terms of their microstructures. Highly transparent (＞90%), low haze transparent electrode films were successfully fabricated with surface resistance as low as (~50 Ω/〉).

Keywords: 투명전극, 은 나노와이어