

Fabrication of Work Function Tuned Transparent Electrode

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Transparent electrode is one of the most important components to realize transparent electronics. Recent advances in photovoltaic cell and light emitting diode (LED) have dramatically derived the development of high-performance transparent electrodes. Indium tin oxide (ITO) is a common material for transparent electrode. However, because of its high work function, ITO is not a suitable candidate for cathode materials of optoelectronic devices which require lower work function than anode materials. For the fabrication of high-performance and fully transparent optoelectronic devices, the development of transparent electrodes with low work function is essential. In this research, we fabricated a transparent electrode by adopting the graphene and metal mesh composite to increase conductivity without significant reduction in transparency. The work function of electrode was lowered by doping process using an organic dopant on graphene film, and this doping process also reduced the sheet resistance of electrode. These results demonstrate a viable way for the fabrication of work function tunable transparent electrode.