

Graphene-based transparent conductive electrodes in GaN-based LEDs

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Graphene-based transparent conductive electrodes were successfully fabricated on GaN-based UV LEDs. UV light was emitted in whole graphene region due to its good current spreading effects. The electrical and optical characteristics of UV LEDs with graphene-based transparent conductive electrodes were drastically enhanced by AuCl₃-based p-type doping of graphene layer because the sheet resistance of graphene layer was largely decreased by AuCl₃-based p-type doping. Then, the long-term stability of AuCl₃ doping in graphene layer was enhanced by SiN_x passivation layer.