

Injectable, Printed Optoelectronics for Bio-Medical Application

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Transferable, bright, and thin micro GaN LEDs and their arrays on flexible substrated were presented. To obtain high performance, a high temperature process (ie, 500 oC) for ohmic contact enhancement was performed on sapphire substrate. Exposing the sapphire and GaN interfaceto a laser, the GaN layer is lifed off from the sapphire substrate and ca be picked up and transfered to a foreign substrate. LEDs fabircated via this unconventional technique show high efficiency and luminescence compared to thin film organic LEDs. The scheme presented here require only interconnect metalization to be performed on the final substrate where devices are printed, thereby minimizing the need for any specialized processing technology, with important consequences in large are electronics for displays and bio-implantable devices. Especially, the unconventional optoelectronic devices are used for optical neural probe for optogenetics applications.