

Highly efficient multi-layered solution-processed organic light emitting devices

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Organic light-emitting devices (OLEDs) have attracted a great deal of attention because of their potentials for next generation of flat panel displays and general lighting. Solution processes such as a slot die coating are considered to have an advantage of low cost over the vacuum process for manufacturing of large area displays or lighting. High efficiency of OLEDs has been achieved by multilayer heterostructures to enable balanced and efficient charge injection, transport, and blocking. However the multilayer structures from solution-process are difficult to be fabricated because of solubility of the materials in each layer. We synthesized cross-linkable hole-transporting materials and host materials for a hole-transporting layer (HTL) and an emitting layer (EML), respectively. They were thermally polymerized around at 180°C to afford the cross-linked film, which were highly resistant to organic solvents.