

Abstract Submitted
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Solution processed multilayers of Alq₃ molecules and TiO₂ nanoparticles for hybrid Bragg mirror¹ SARAHN NAZARET, AMBER ETHRIDGE, AJITH DESILVA, Univ of West Georgia — Tris (8-hydroxy) quinoline aluminum (Alq₃) is a small-molecule-based organic compound with a low index of refraction. It has been widely used as a superior material for organic light emitting diodes. Colloidal titanium dioxide (TiO₂) is constructed of inorganic nanoparticles having a very high index of refraction. They have been commonly used in thin-film optics. Multilayer structures of Alq₃ molecules and TiO₂ nanoparticles are successfully fabricated from solution process and using spin coating techniques. A structure consisting of alternating organic/inorganic layers exhibited the properties of a distributed Bragg reflector (DBR). The peak of the reflectivity for the constructed DBR was chosen as 530 nm, at which the emission of Alq₃ occurred. For this device, the reflectivity over 90% can be obtained with as few as five periods of the structure. Fabrication process and optical properties of the structure are presented.

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