Host-Dopant Light-Emitting Electrochemical Cells Based on Fluorescent Small Organic Molecules

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Light-emitting electrochemical cells are considered to be the replacement for organic light-emitting diodes (OLEDs). Simple device architecture and air stable electrodes makes LECs attractive. Current research on LECs are focused on conjugated polymers and ionic transition metal complexes. So here, we introduce a LEC device based on strongly luminescent phenanthroimidazole derivative as a host-dopant system. The device structure was literally similar to a conventional LEC device. The concentration of dopant is tuned to get high electroluminescence from our LEC device. Moreover, the importance of host material on the performance of LEC devices were investigated. The J-V characteristics reveals that the host material possesses good charge transporting ability, which is critical for electroluminescent devices.