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Design and Synthesis of a New Class of Alkynylplatinum(II) Complexes for Solution-Processable Organic Light-Emitting Devices

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A novel class of luminescent cyclometalated platinum(II) 1,3-bis-(*N*-alkylbenzimidazol-2'-yl)benzene (bzimb) complexes has been designed and synthesized.¹⁻³ The emission color can be readily tuned by the introduction of various substituents to the anionic phenyl rings of the bzimb ligand.^{2,3} Their photophysical, electrochemical and electroluminescence properties have been investigated. Efficient organic light-emitting devices (OLEDs) have been fabricated based on this class of complexes using vacuum deposition and solution-processing techniques.^{2,3}

To further improve the solution-processable device performance, dendritic pendants have been successfully incorporated into the platinum(II) complexes. The dendritic platinum(II) complexes show remarkable photoluminescence quantum yields of up to 80 % in spin-coated thin films. The solution-processable OLEDs show remarkable performances with high EQEs, suggesting a promising class of dendritic platinum(II) complexes for solution-processable OLEDs.

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