BROMINE CONTAINING NAPHTHALIMIDES EXHBITING ROOM-TEMPARETURE PHOSPORESCENCE

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Phosphorescence is generally known as the radiative transition between two states with the different spin-multiplicities. This phenomenon is often observed for inorganic materials and organometallic complex materials [1]. Recently, room-temperature phosphorescence (RTP) from pure organic materials has attracted great attention owing to its various functional applications in organic light-emitting diodes, digital security, optical recording devices, sensors, for bioimaging etc. [2]. Since phosphorescence originates because of a spin-forbidden transition, decay times of phosphorescence (10^{-6} to 10^{-2} s) are typically longer than those of fluorescence (10^{-9} to 10^{-7} s) [3]. The triplet excited state of RTP material. provides longer lifetimes of emission and this facilitates the design of relatively inexpensive optical sensing systems based on decay-time measurements. The interference from short-lived fluorescence and scattering light can be easily avoided using an appropriate delay time and the larger Stokes' shifts of the RTP process simplifying the spectral separation between the excitation light and the phosphorescence emission [5]. Four differently bromine substituted naphthalimide derivatives synthesized in two steps, i.e. bromination and imidisazation. The films of all the synthesized compounds exhibited room-temperature phosphorescence. Thermal properties were studied by thermogravimetric analysis and differential scanning calorimetry. Electrochemical properties studied by cyclic voltammetry properties and photophysical properties will also be reported.

References

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