

Phosphorescent co-crystal assembled by 1,4-diiodotetrafluorobenzene with carbazole based on C-I $\cdots\pi$ halogen bonding

Hai Yue Gao, Qian Jin Shen, Xiao Ran Zhao, Xiao Qing Yan, Xue Pang and Wei Jun Jin^{*a}

College of Chemistry, Beijing Normal University, Beijing 100875 (P. R. China)

E-mail: wjjin@bnu.edu.cn Tel/Fax: (+86)10-58802146

The microamount of water-immiscible organic solvent is necessary to form well-dispersed microparticles. Carbazole be dissolved firstly in an water-immiscible organic solvent together with 1,4-DITFB in certain molar ratio and then dispersed with water for preparing the colloidal microparticle suspension. Therefore, it is necessary to investigate the solvent effects on phosphorescence emission from microcrystal suspension at first. Figure 1S shows methanol and ethanol among the solvents tested at 2% (v/v) have the best effect on phosphorescence intensity. Methanol with larger polarity leads to poorer stability of microparticle suspension than ethanol. Figure 2S shows 2% ethanol (in v/v) induces the highest phosphorescence intensity, while the excessive ethanol causes microparticles partially disappeared. So the amount and types of solvents must be controlled well for preparing microparticle dispersion required. The experimental results show that there is no change in phosphorescence intensity and wavelength after a long enough standing time in the presence of 2% ethanol.

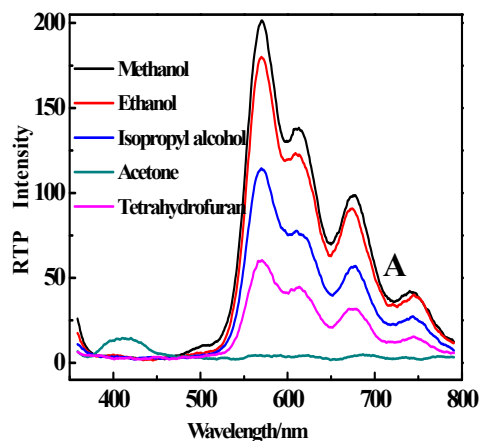


Figure 1S Phosphorescence spectra affected by different organic solvents.

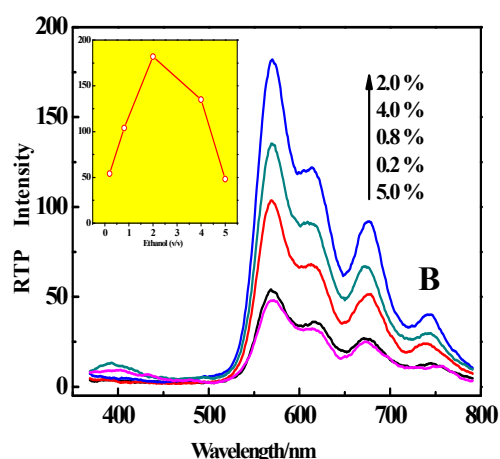


Figure 2S Effect of ethanol content on phosphorescence of carbazole in co-crystal microparticle suspension. The spectra of raising stage up to maximum are given. The inset shows effect of all tested concentration on intensity.

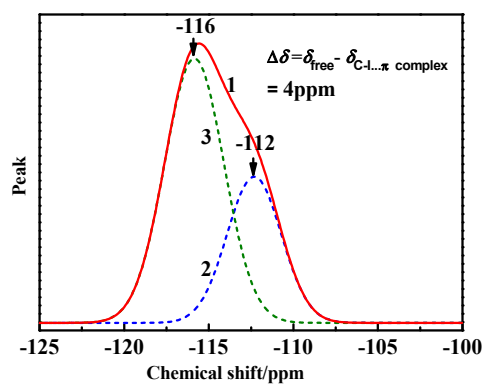


Figure 3S ^{19}F NMR spectrum. Powder mixture of ground co-crystal with free 1,4-DITFB (1); The chemical shifts of ^{19}F in free 1,4-DITFB (2) and in ground co-crystal and (3) were separated by assuming a Gaussian distribution of both peaks.