

1. Chemicals and procedures:

The solvent acetonitrile was dried with calcium hydride and redistilled. Erbium and Neodymium nitrates were obtained from the corresponding oxides Er_2O_3 (99.99%) and Nd_2O_3 (99.99%).

TPY-Si was prepared as follows: A mixture of MPS (1.7mmol), ATP (1.7mmol), 2, 2'-azobisisobutyronitrile (AIBN, 0.05mmol) and acetonitrile (15mL) were heated to 80°C for 6 h under nitrogen. Then the solvent was removed in vacuo and the pasty residue was washed with cold hexane, then a clear oil of TPY-Si was obtained.

The hybrid materials were prepared as follows: TPY-Si (0.50g, 1.0mmol) was dissolved in 2mL of DMF, then TEOS and H_2O were added to it with the molar ratio 1:4:16 (TPY-Si:TEOS: H_2O) under stirring. The $\text{Er}(\text{NO}_3)_3$ ($\text{Nd}(\text{NO}_3)_3$) and DBM solution of DMF were added to the resulting mixture, the mole ratio of TPY-Si/ Ln^{3+} /DBM was 1:1:3. The mixture was agitated magnetically to achieve a single phase and then transferred into a cuvette. Thermal curing was performed at 60°C and continued until the sample solidified. After 5 days, the samples were dried for 24 h at 100°C and collected as monolithic bulks and ground as powder materials for the photophysical studies.

2. The spectra of TPY-Si and hybrid materials

List of Figures

Fig. 1 FT-IR spectra for ATP (A), TPY-Si (B), $\text{Er}(\text{DBM})_3\text{TPY-Si}$ (C) and $\text{Nd}(\text{DBM})_3\text{TPY-Si}$ (D).

Fig. 2 ^1H NMR spectrum of TPY-Si ($\text{DMSO}-d_6$).

Fig. 3 Mass spectrum of TPY-Si.

Fig. 4 UV-Vis spectra of ATP and DBM.

Fig. 5 DR spectra of $\text{Er}(\text{DBM})_3\text{TPY-Si}$ and $\text{Nd}(\text{DBM})_3\text{TPY-Si}$

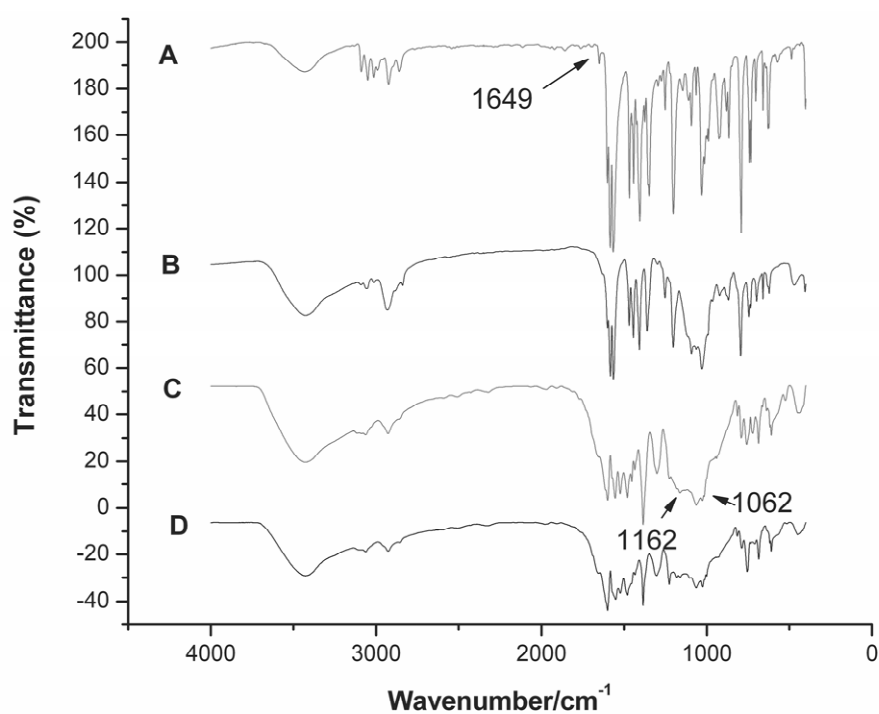


Fig. 1 FT-IR spectra for ATP (A), TPY-Si (B), Er(DBM)₃TPY-Si (C) and Nd(DBM)₃TPY-Si (D).

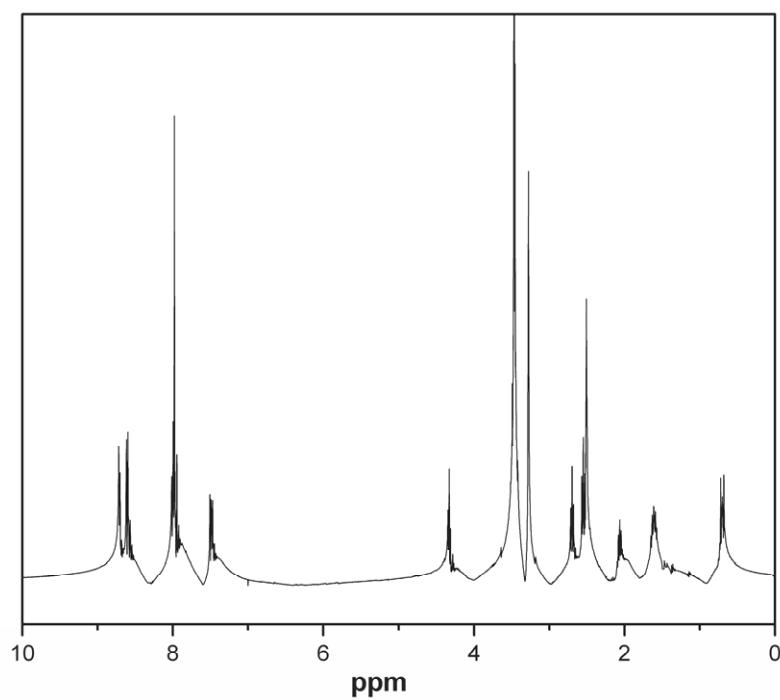


Fig. 2 ¹H NMR spectrum of TPY-Si (DMSO-*d*₆).

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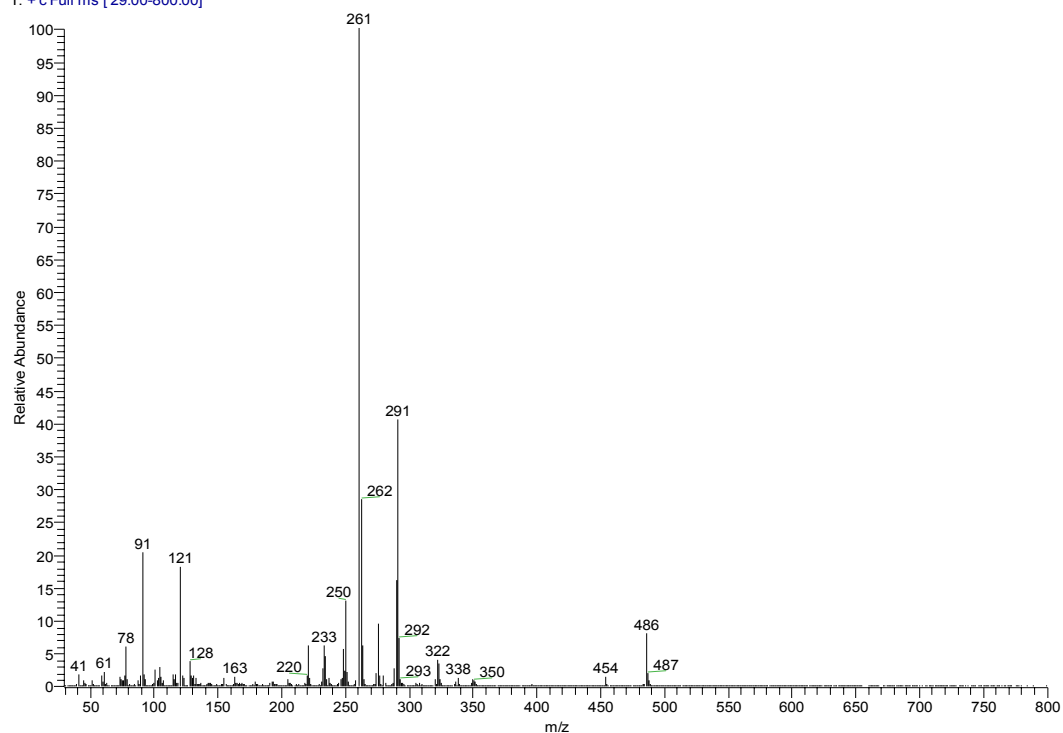


Fig. 3 Mass spectrum of TPY-Si.

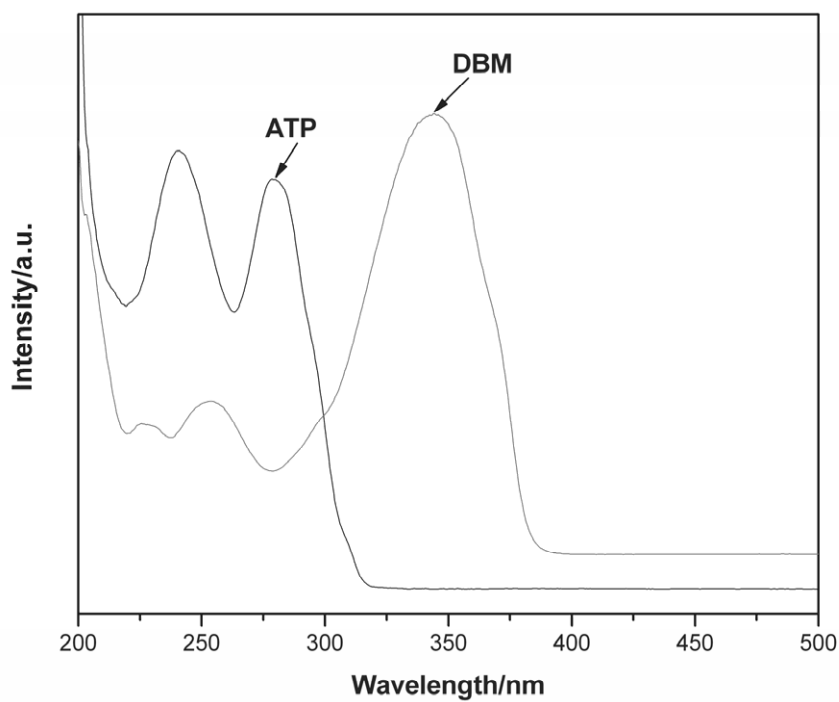


Fig. 4 UV-Vis spectra of ATP and DBM.

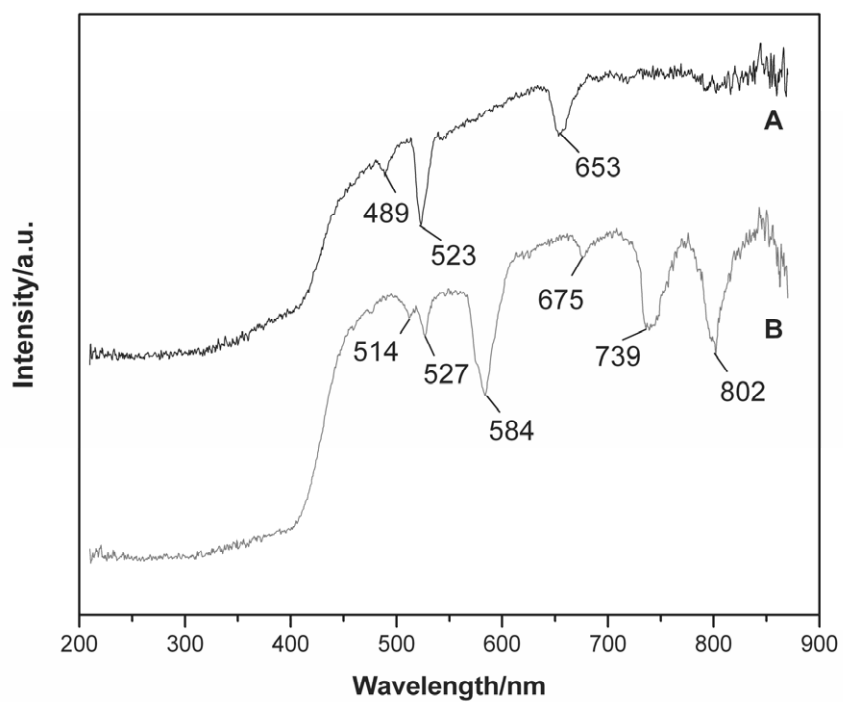


Fig. 5 DR spectra of Er(DBM)₃TPY-Si and Nd(DBM)₃TPY-Si