[Supporting Information]

Synthesis and Luminescence Properties of
Core-Shell-Shell Composites: SiO$_2$@PMDA-Si-Tb@SiO$_2$
and SiO$_2$@PMDA-Si-Tb-phen@SiO$_2$

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Figure S1. The $^1$HNMR of PMDA-Si.

Figure S2. FT-IR spectra of PMDA-Si (a), SiO$_2$ (b), SiO$_2$@PMDA-Si (c), SiO$_2$@PMDA-Si-Tb (d), and SiO$_2$@PMDA-Si-Tb@SiO$_2$ (e).
Figure S3. FT-IR spectra of phen (a), SiO$_2$@PMDA-Si-Tb-phen (b), and SiO$_2$@PMDA-Si-Tb-phen@SiO$_2$ (c).

Figure S4. Phosphorescence spectra of PMDA-Si (a) and phen (b). Triplet state of PMDA-Si, phen and the excited state of Tb(III) (c).