

## Supporting Information

The Intramolecular and intermolecular interaction controlled reversible  
core-shell structures and photoluminescent properties of lanthanide ions  
doped diblock copolymers

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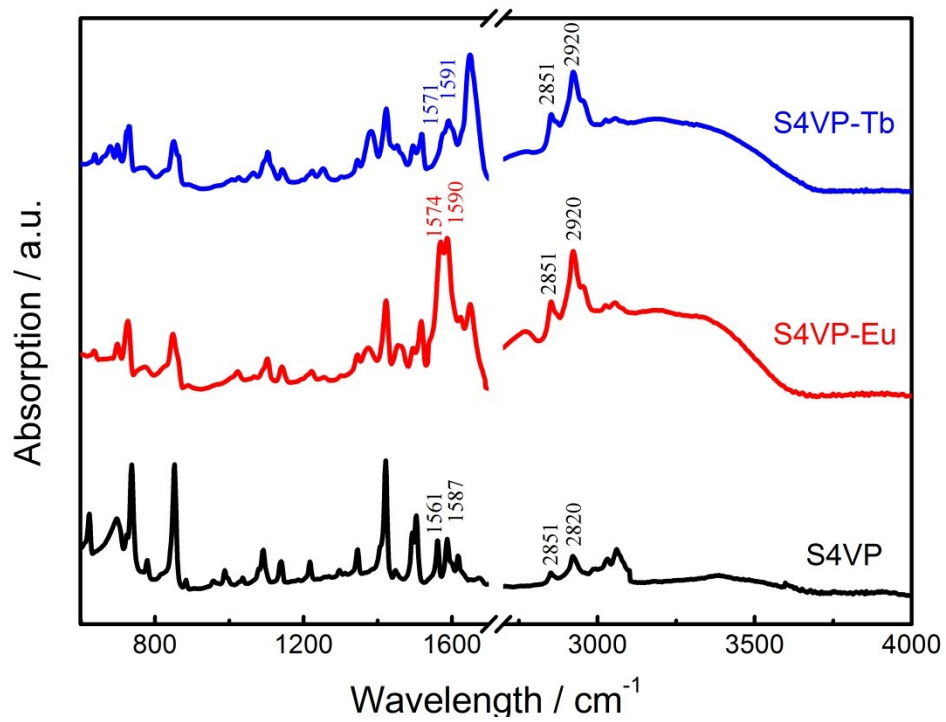


Figure SI-1. FTIR spectra of S4VP, S4VP-Eu and S4VP-Tb.

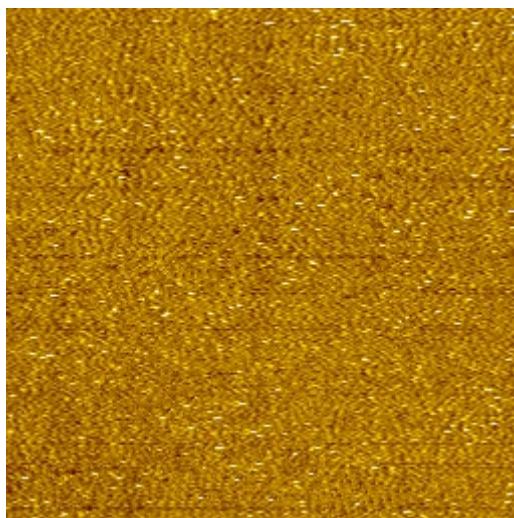


Figure SI-2: AFM topography images ( $20\mu\text{m} \times 20\mu\text{m}$ ) of neat S2VP.

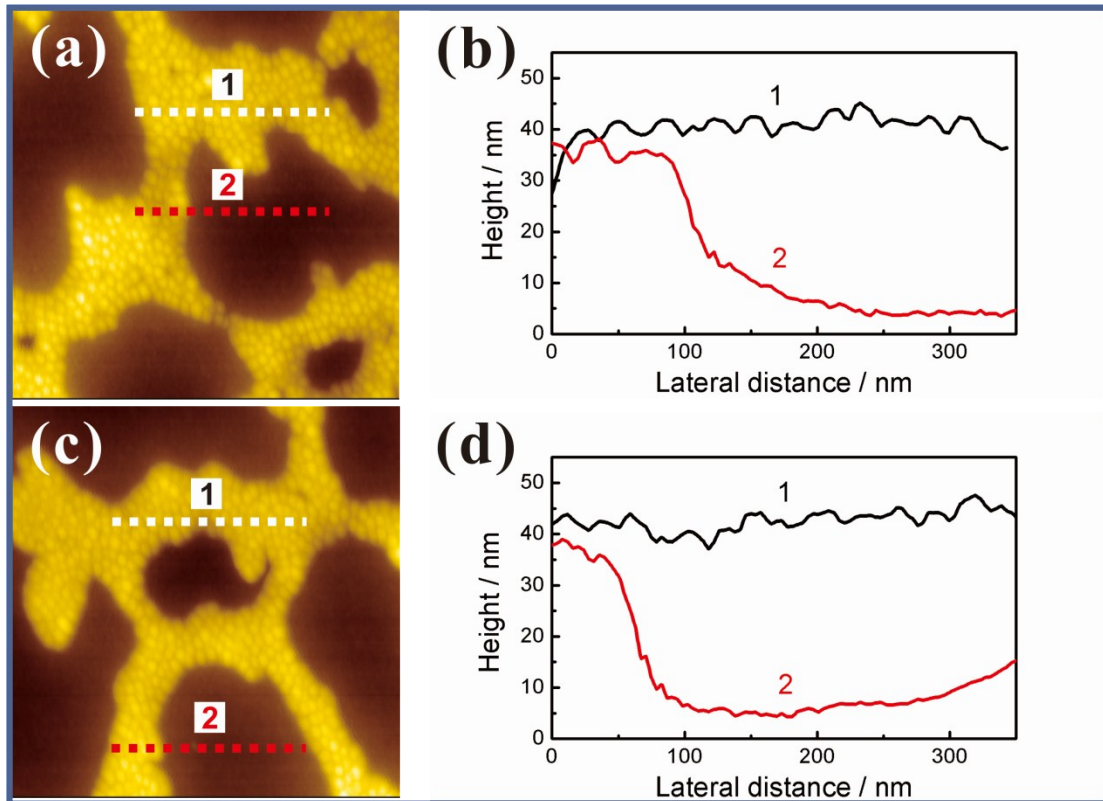


Figure SI-3: AFM topography images and the height profiles of (a-b) S2VP[Eu(0.5)] film and (c-d) S2VP[Tb(0.5)] film. The height profiles follow the lines indicated in AFM topography images.

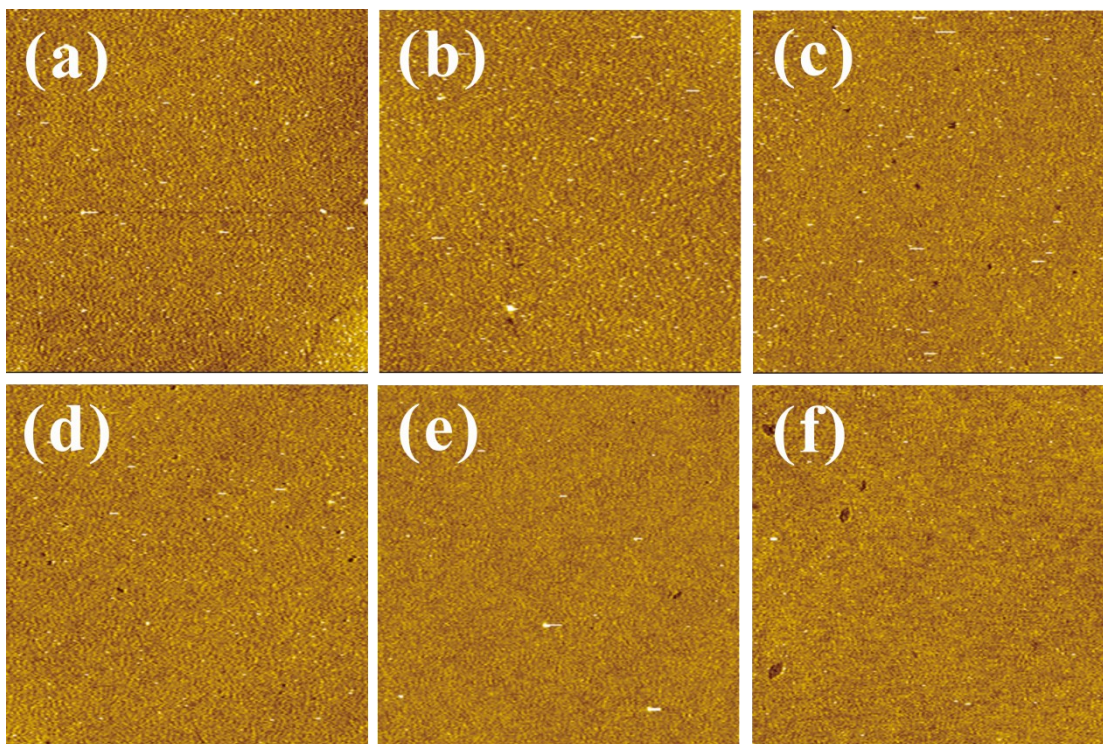


Figure SI-4 AFM topography images ( $20\mu\text{m} \times 20\mu\text{m}$ ) of (a) S4VP[Eu(0.3)] (b) S4VP[Eu(0.5)], (c) S4VP[Eu(1.0)], (d) S4VP[Tb(0.3)], (e) S4VP[Tb(0.5)], and (f) S4VP[Tb(1.0)].

The UV-vis absorption spectra of block copolymers and its complexes show strong absorption from 270 to 320nm due to the  $\pi \rightarrow \pi^*$  transition from Phen and pyridine. The maximum absorptions of S4VP and S2VP shifted from 300nm and 297nm to 292nm and 290nm, respectively, which could be attributed to the formation of coordination bonds between  $\text{Ln}^{3+}$  and PVP segments.

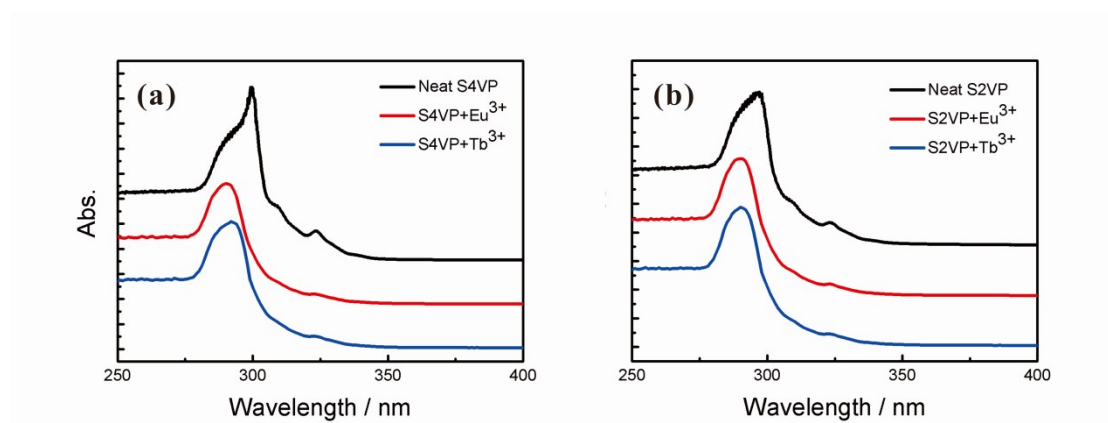


Figure SI-5: UV-vis absorption spectra of (a) neat S4VP and S4VP[Ln(1.0)] and (b) neat S2VP and S2VP[Ln(1.0)].