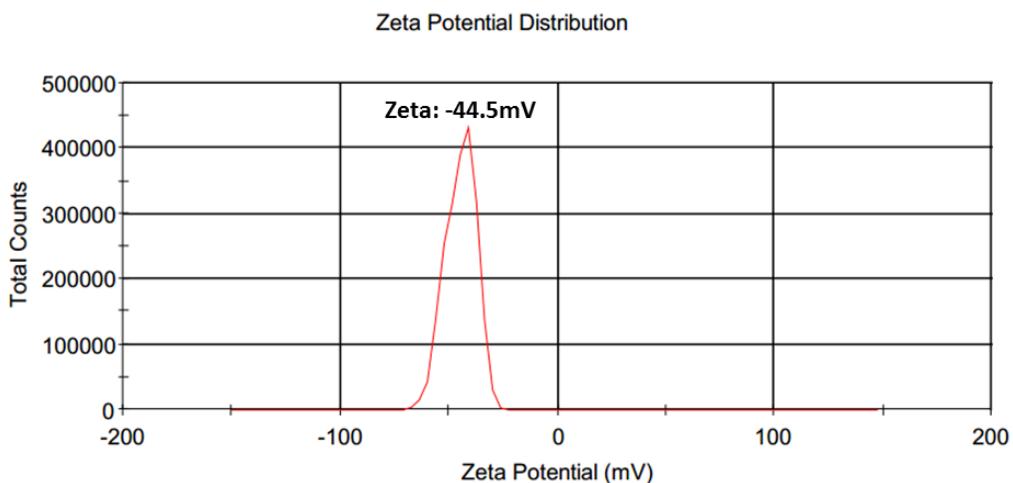


**Electronic Supplementary Information for  
A Dual-Stimuli-Responsive Fluorescent Switch Ultrathin Film**

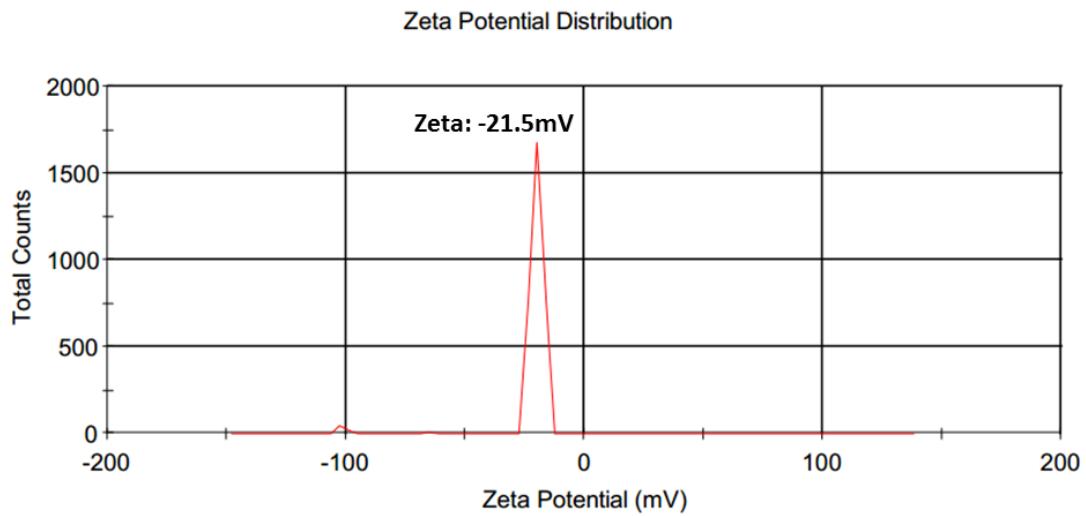
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Chemical Technology, Beijing 100029, P. R. China*

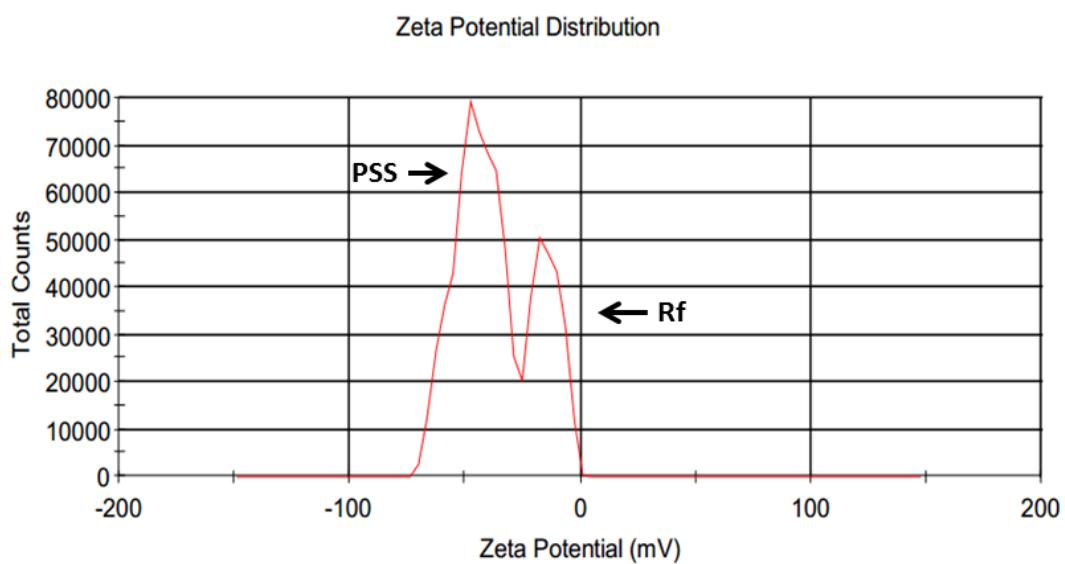
E-mail: yandongpeng001@163.com (D. Yan); E-mail: weimin@mail.buct.edu.cn (M. Wei).



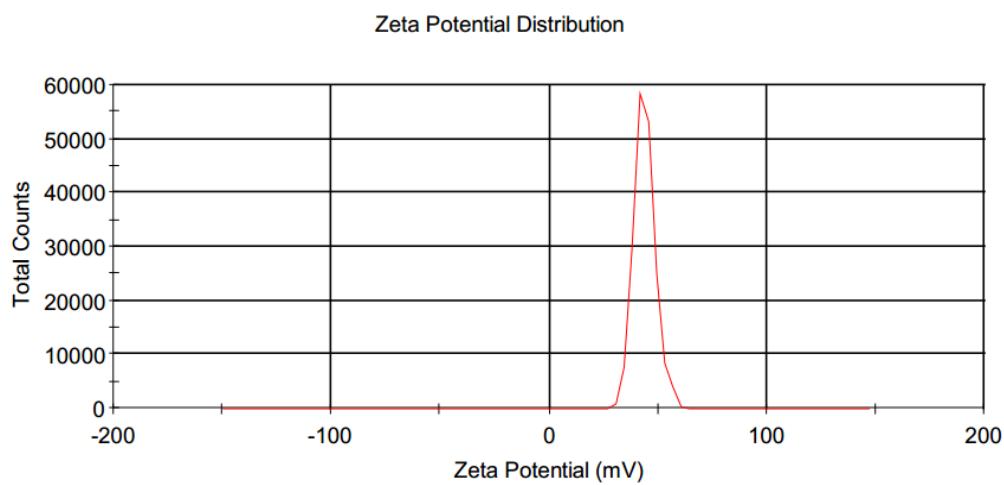
**Figure S1.** The Zeta potential (mV) of SP@PTBEM micelle.



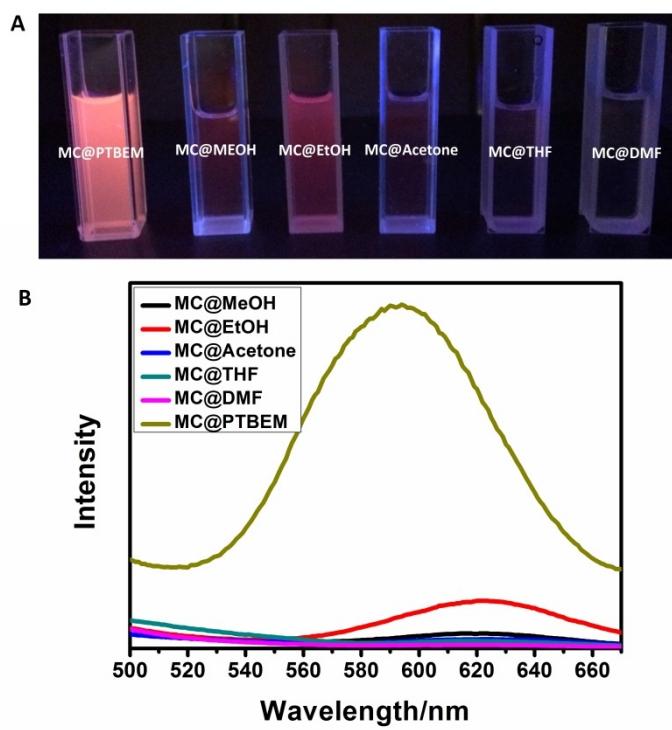
**Figure S2.** The Zeta Potential (mV) of Rf solution.



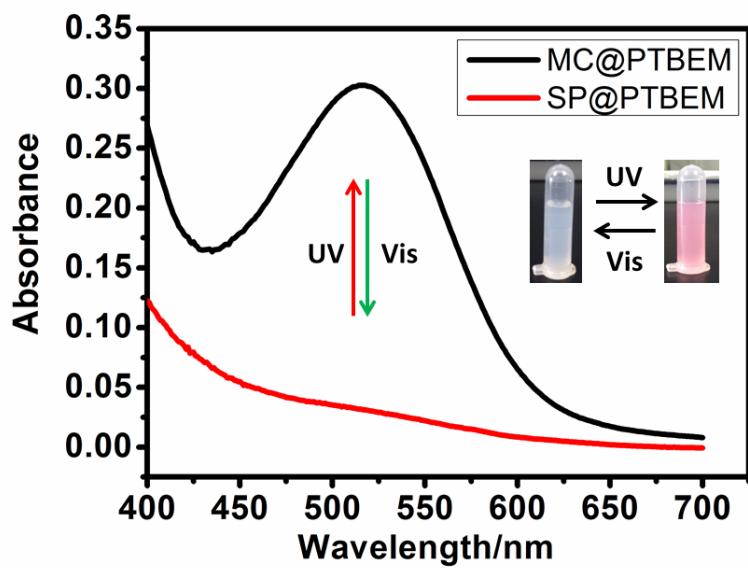
**Figure S3.** The Zeta Potential (mV) of Rf-PSS hybrid solution.



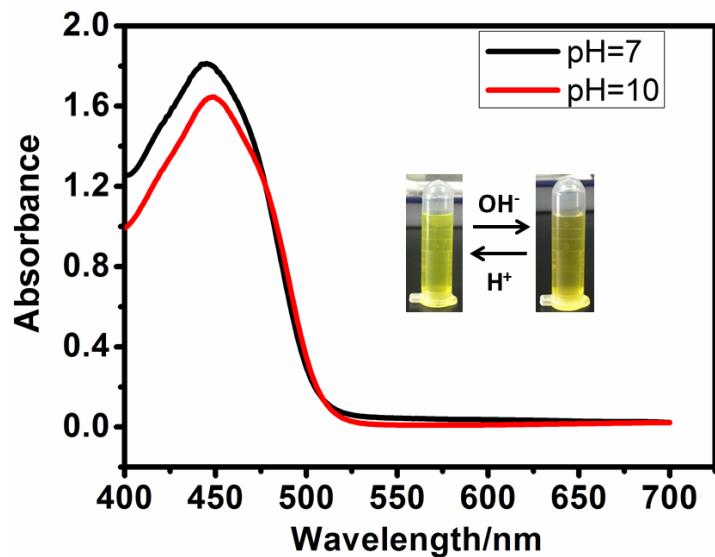
**Figure S4.** The Zeta potential (mV) of LDHs nanosheets suspension.



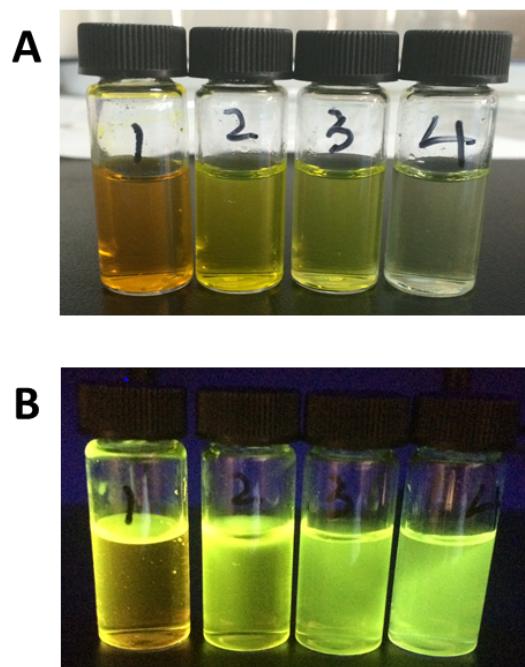
**Figure S5.** (A) The fluorescence photographs and (B) corresponding photoluminescence spectra of MC in various solvents ( $5 \times 10^{-4}$  mol/L) upon irradiation by UV light for 120s.



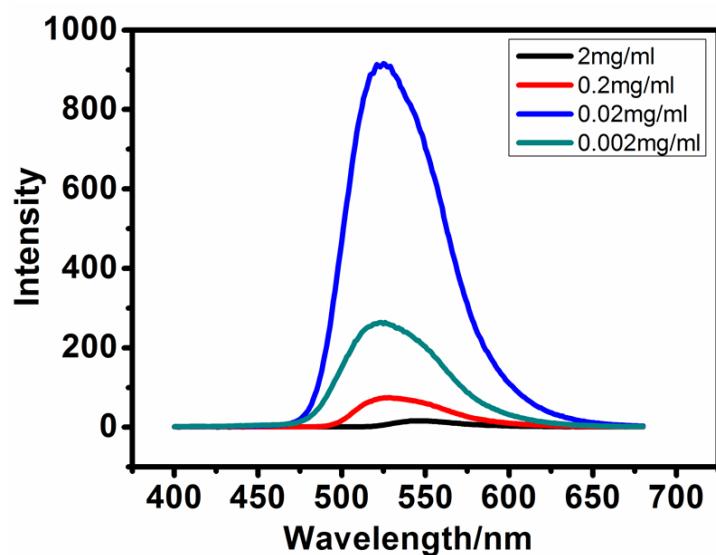
**Figure S6.** UV-Vis absorption spectra of SP@PTBEM and MC@PTBEM, and the insert shows the photograph of change from SP to MC.



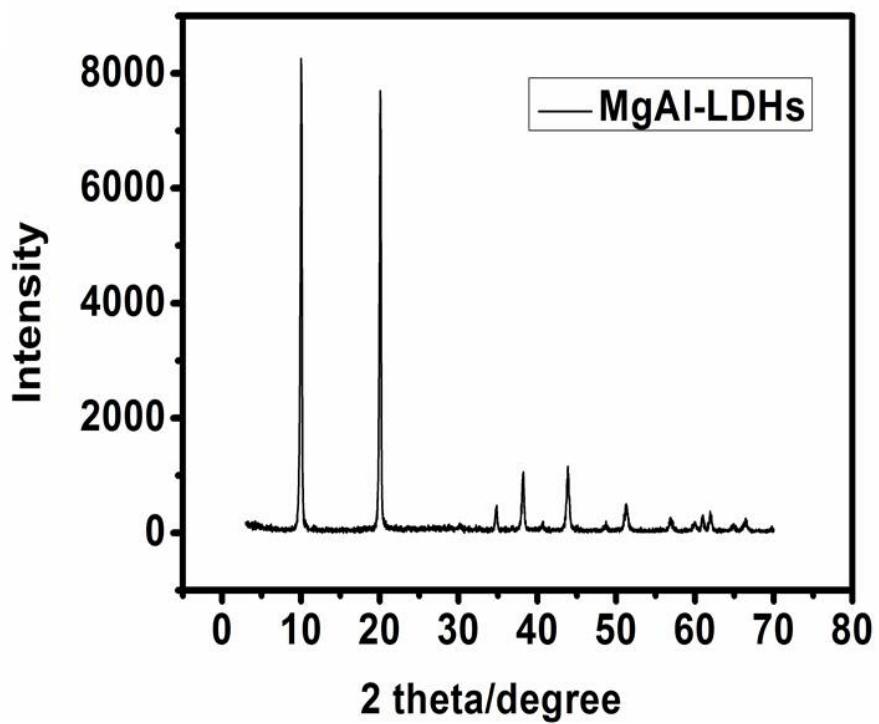
**Figure S7.** UV-Vis absorption spectra of Rf-PSS (pH=7) and Rf-PSS (pH=10), the insert shows the relevant photograph of change between pH=7 and pH=10.



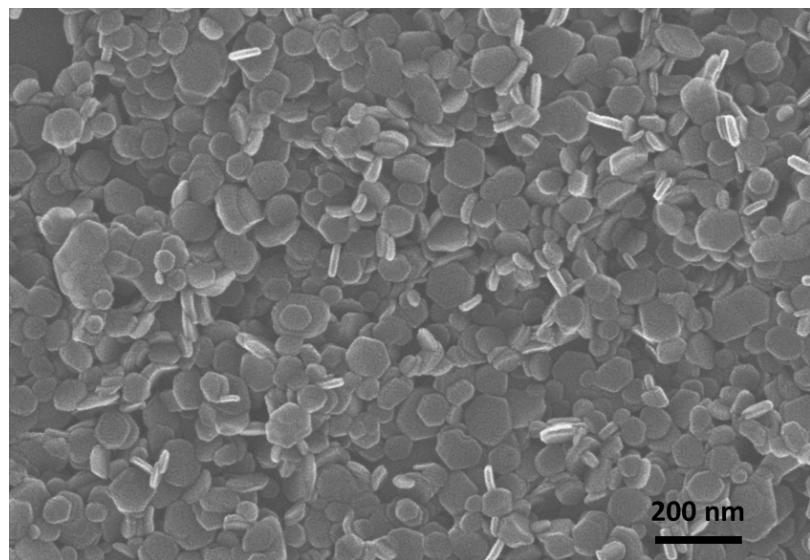
**Figure S8.** The photographs of Rf with different concentration (2 mg/ml, 0.2 mg/ml, 0.02mg/ml, 0.002mg/ml) under (A) the visible light and (B) the UV light.



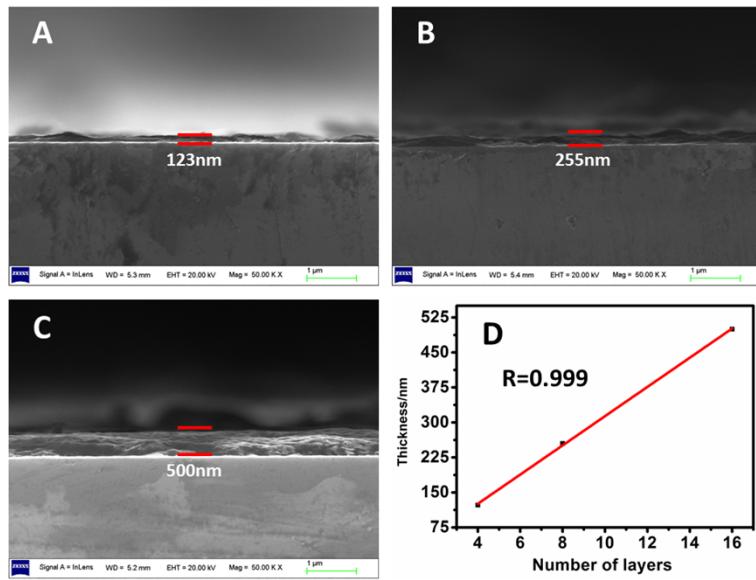
**Figure S9.** The photoluminescence spectra of Rf with different concentrations (2 mg/ml, 0.2 mg/ml, 0.02 mg/ml, 0.002 mg/ml).



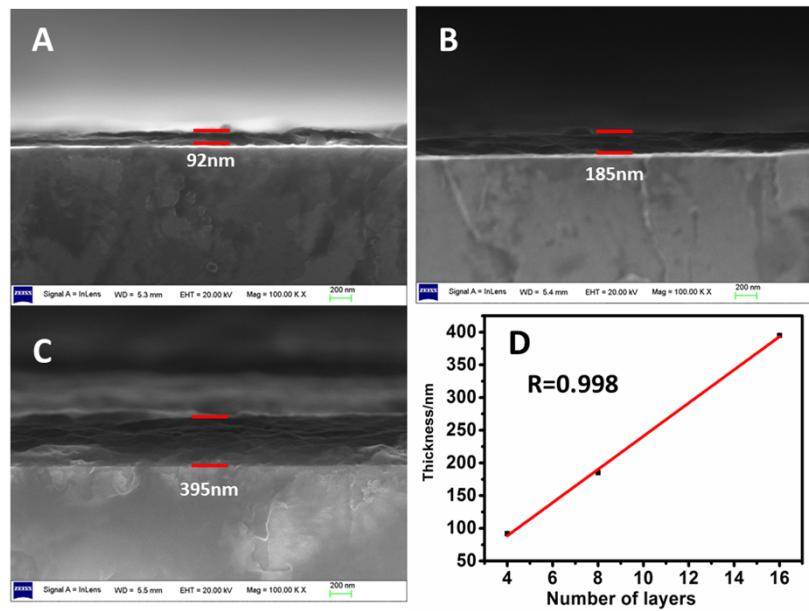
**Figure S10.** The XRD pattern of MgAl-LDHs nanplatelets.



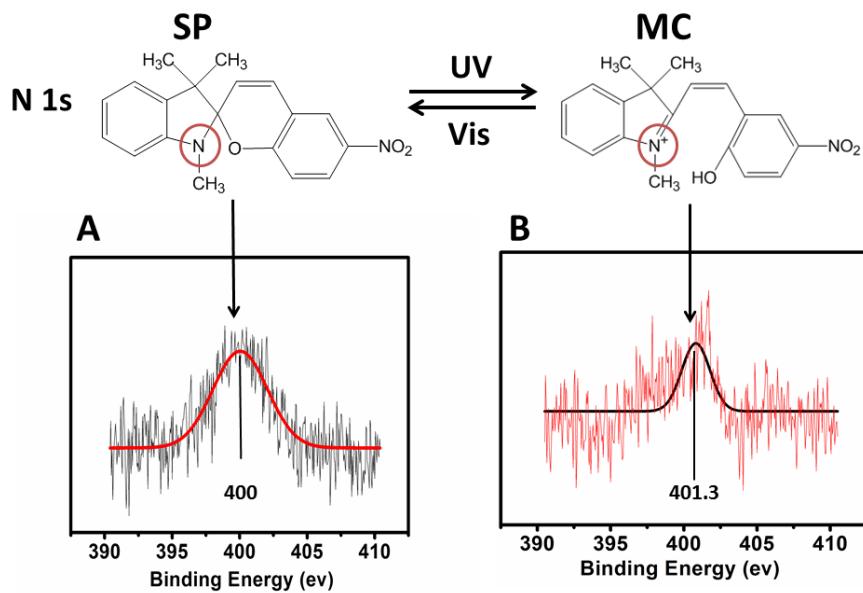
**Figure S11.** The SEM image of MgAl-LDHs nanplatelets.



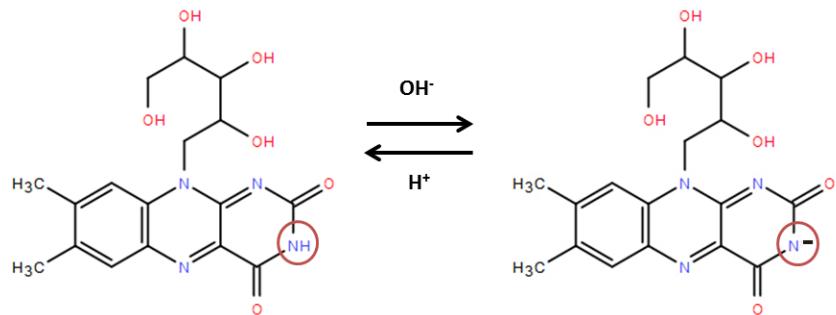
**Figure S12.** Side-view of SEM images for: (A)  $(\text{SP@PTBEM/LDHs})_4$  UTF, (B)  $(\text{SP@PTBEM/LDHs})_8$  UTF, (C)  $(\text{SP@PTBEM/LDHs})_{16}$  UTF on a silicon substrate. (D) The linear correlation between thickness of  $(\text{SP@PTBEM/LDHs})_n$  UTFs and bilayer number  $n$ , with a bilayer thickness of 31 nm.



**Figure S13.** Side-view of SEM images for: (A)  $(\text{Rf-PSS/LDHs})_4$  UTF, (B)  $(\text{Rf-PSS/LDHs})_8$  UTF, (C)  $(\text{Rf-PSS/LDHs})_{16}$  UTF on a silicon substrate. (D) The linear correlation between thickness of  $(\text{Rf-PSS/LDHs})_n$  UTFs and bilayer number  $n$ , with a bilayer thickness of 25 nm.



**Figure S14.** X-ray photoemission spectra of the N 1s core level regions of (A) the closed-ringed SP form and (B) open-ringed MC form.



**Figure S15.** The transformation of molecular structure for riboflavin caused by pH value.<sup>[1]</sup>

1. G. R. Penzer and G. K. Radda, *Q. Rev. Chem. Soc.*, 1967, **21**, 43–65.