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Supplementary Material

Host–Guest Inclusion System of Luteolin with Polyamine-β-cyclodextrin: Preparation, Characterisation, Anti-oxidant and Anti-cancer Activity

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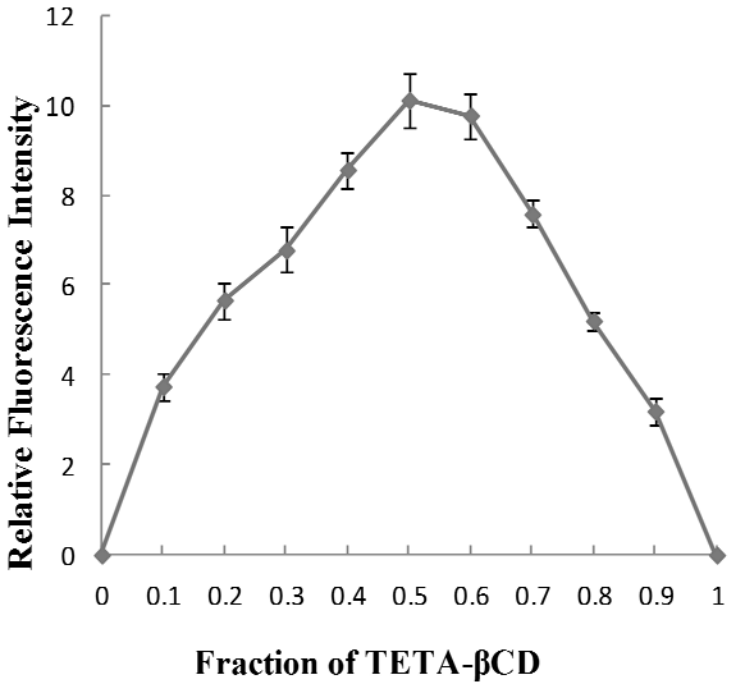


Fig.S1. Job plot for the Lu/TETA -βCD system at λem: 430 nm ([Lu]+[TETA-βCD]=4.0×10^{-5} M) in pH 7.4 buffer.

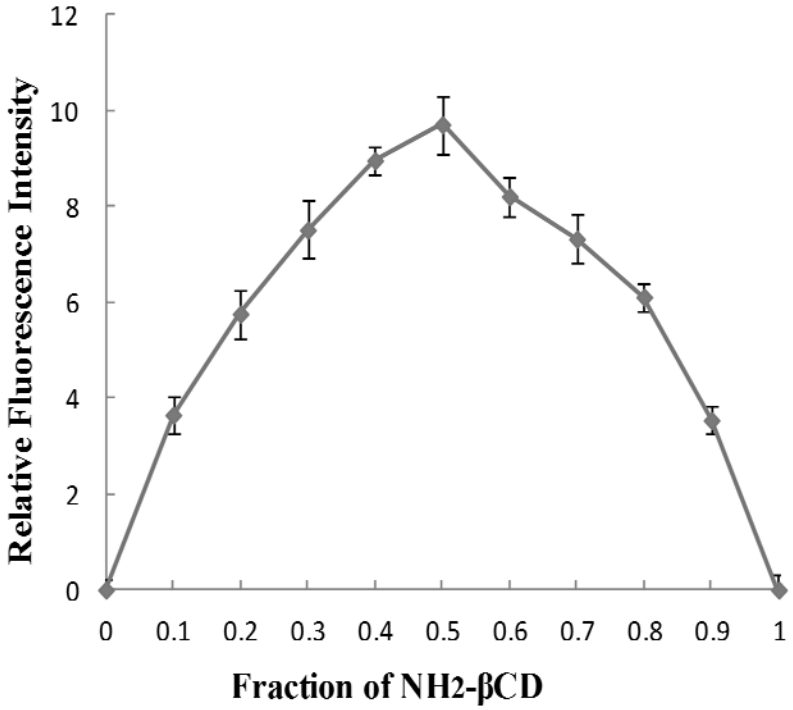


Fig.S2. Job plot for the Lu/NH_2 -βCD system at λem: 430 nm ([Lu]+[NH_2-βCD]=4.0×10^{-5}M) in pH 7.4 buffer.

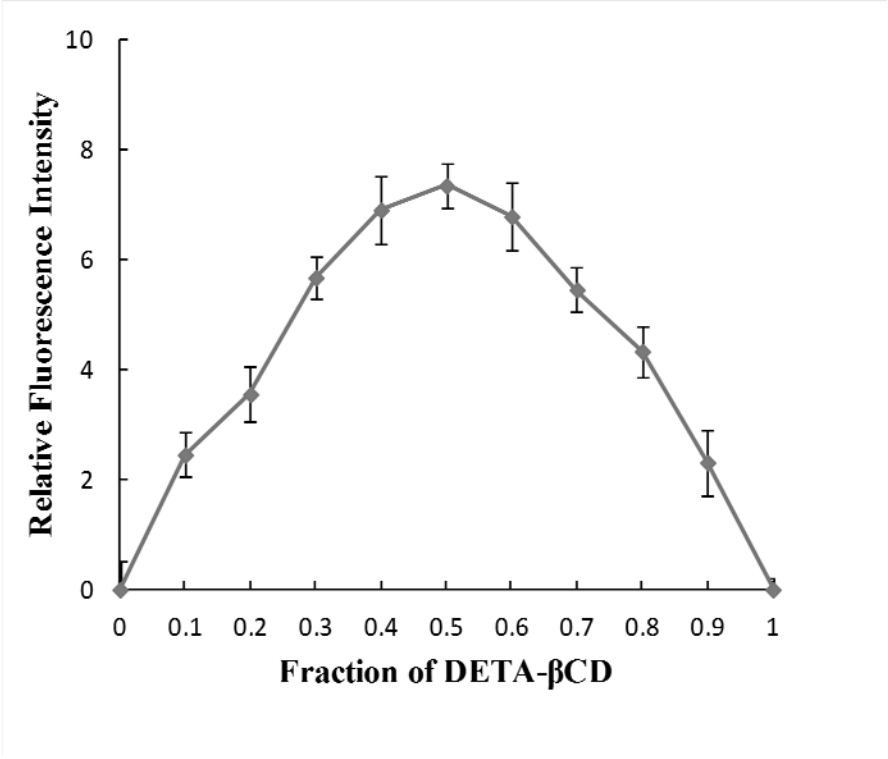


Fig.S3. Job plot for the Lu/DETA-βCD system at λem: 430 nm ([Lu]+[DETA-βCD]=4.0×10^{-5} M) in pH 7.4 buffer.

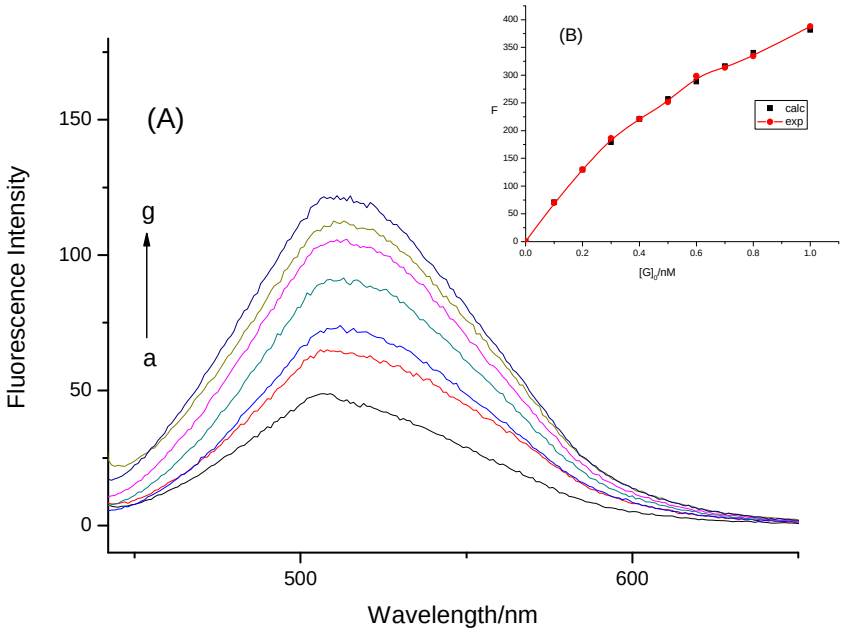


Fig.S4. Fluorescence emission spectra of LU (4.0×10^{-5} mol/L) containing various concentrations of NH_2-βCD (from a to g: 0.0×10^{-4}, 0.1×10^{-4}, 0.3×10^{-4}, 0.4×10^{-4}, 0.6×10^{-4}, 0.6×10^{-4}, and 0.8×10^{-4} mol/L of NH_2-βCD); emission at 509 nm. (B) Nonlinear least-squares curve-fitting analyses for the inclusion complexation.

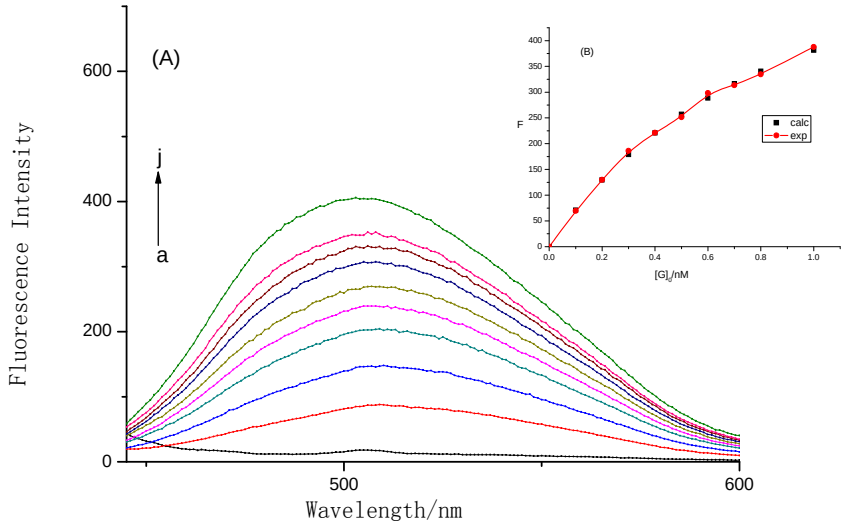


Fig.S5. (A) Fluorescence emission spectra of LU (4.0×10^{-5} mol/L) containing various concentrations of EN-βCD (from a to j: 0.0×10^{-4}, 0.1×10^{-4} ,0.2×10−4, 0.3×10^{-4}, 0.4×10^{-4}, 0.5×10^{-4}, 0.6×10^{-4}, 0.7×10^{-4} ,0.8×10^{-4} and 1.0×10^{-4} mol/L of EN-βCD); emission at 509 nm. (B) Nonlinear least-squares curve-fitting analyses for the inclusion complexation.

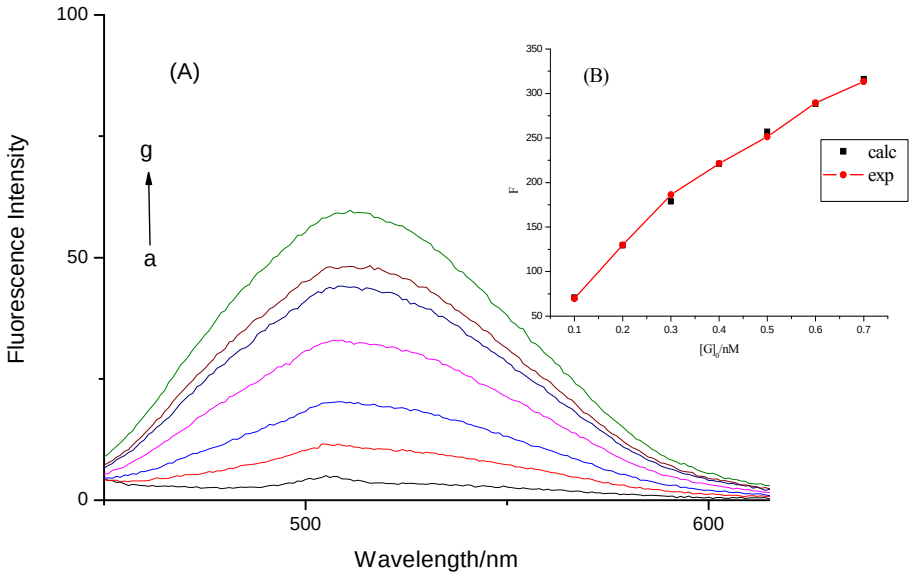


Fig.S6. (A) Fluorescence emission spectra of LU (4.0×10^{-5} mol/L) containing various concentrations of TETA-βCD (from a to j: 0.0×10^{-4}, 0.1×10^{-4} ,0.2×10−4, 0.3×10^{-4}, 0.4×10^{-4}, 0.5×10^{-4}, 0.6×10^{-4} and 0.7×10^{-4} mol/L of TETA-βCD); emission at 509 nm. (B) Nonlinear least-squares curve-fitting analyses for the inclusion complexation.

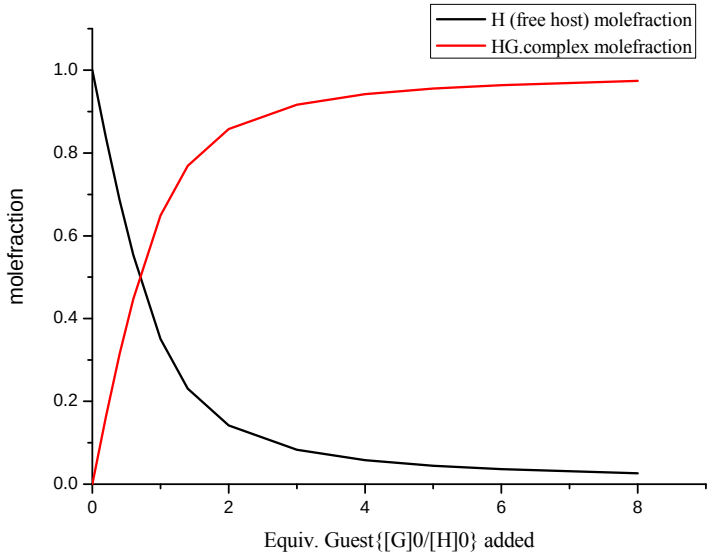


Fig.S7.Speciation plot for NH_2-βCD (red curve) and LU/DETA-βCD complex (black curve) at λ_{UV}: 353 nm in pH 7.4 buffer.

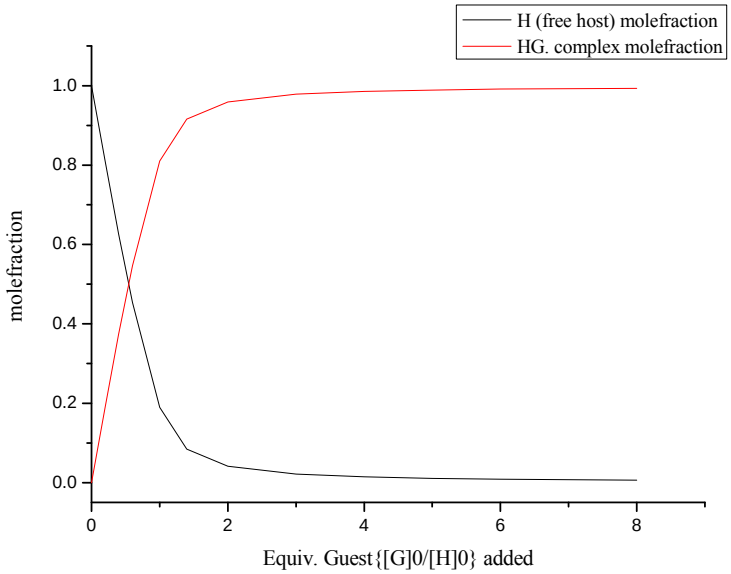


Fig.S8.Speciation plot for EN-βCD (red curve) and LU/DETA-βCD complex (black curve) at λ_{UV}: 353 nm in pH 7.4 buffer.

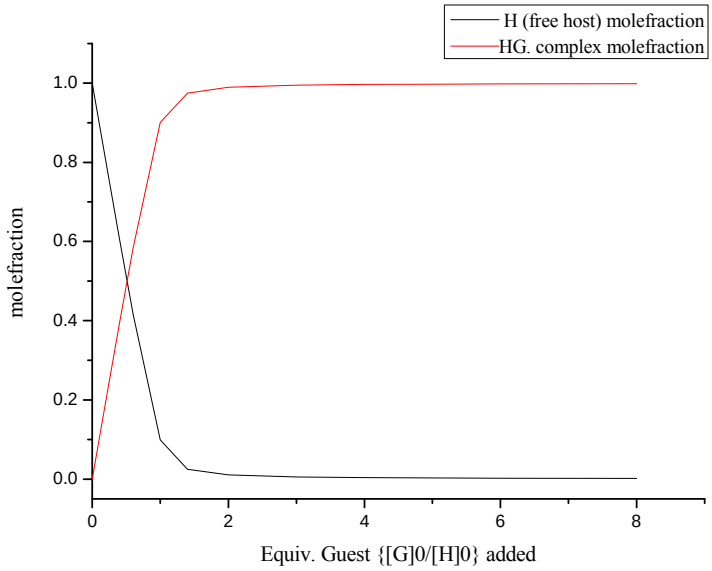


Fig.S9. Speciation plot for TETA-βCD (red curve) and LU/DETA-βCD complex (black curve) at λ_{UV}: 353 nm in pH 7.4 buffer.

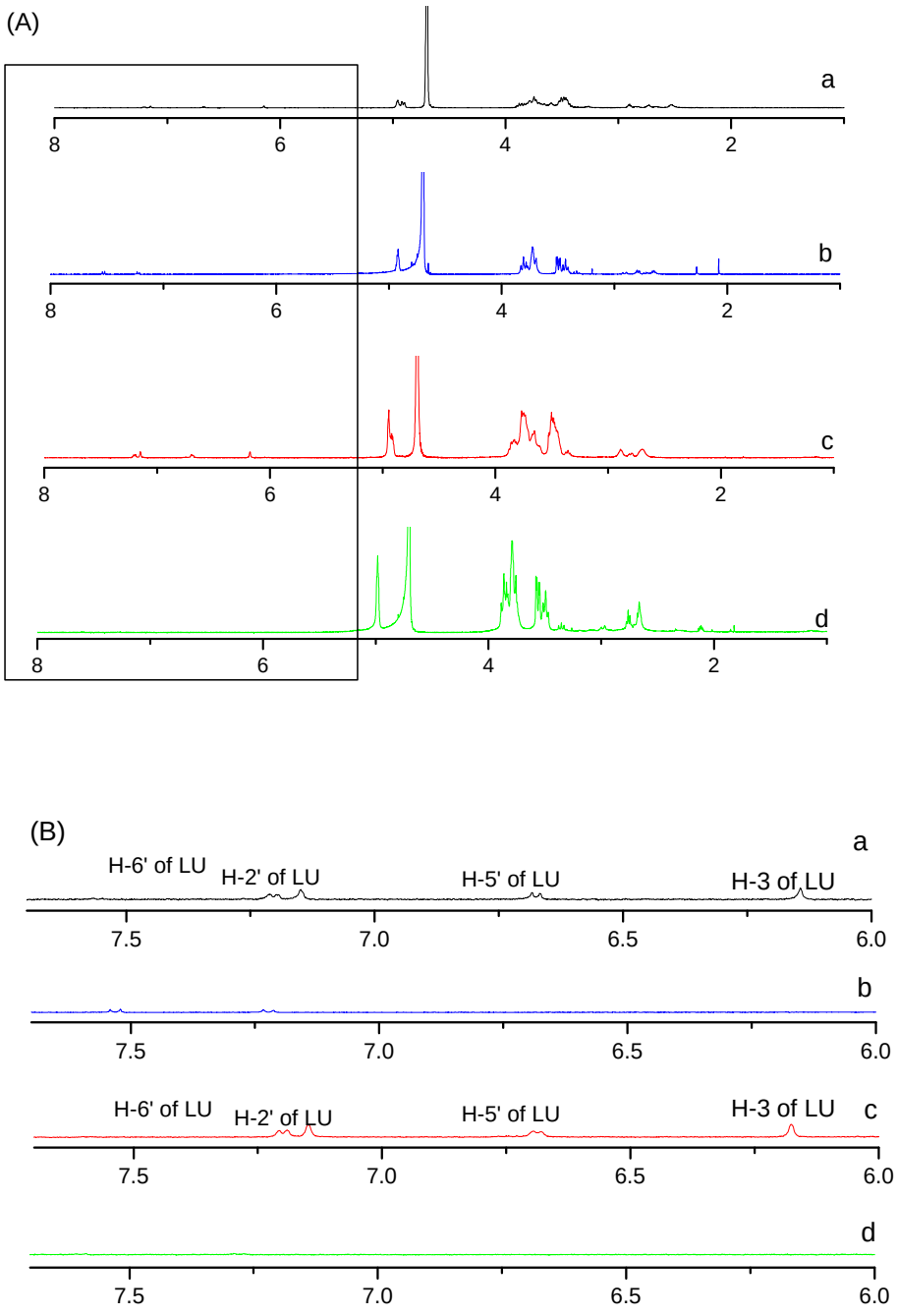


Fig.S10. ^{1}H NMR spectra of LU in the absence and presence of EN-βCD and TETA-βCD in D_2O at 25 °C, respectively. a: LU/NH_2-βCD complex, b:EN-βCD, c: LU/TETA-βCD complex, d: TETA-βCD (it shows the enlarged NMR spectrum from approximately (6.0-7.7 ppm in the left box.).

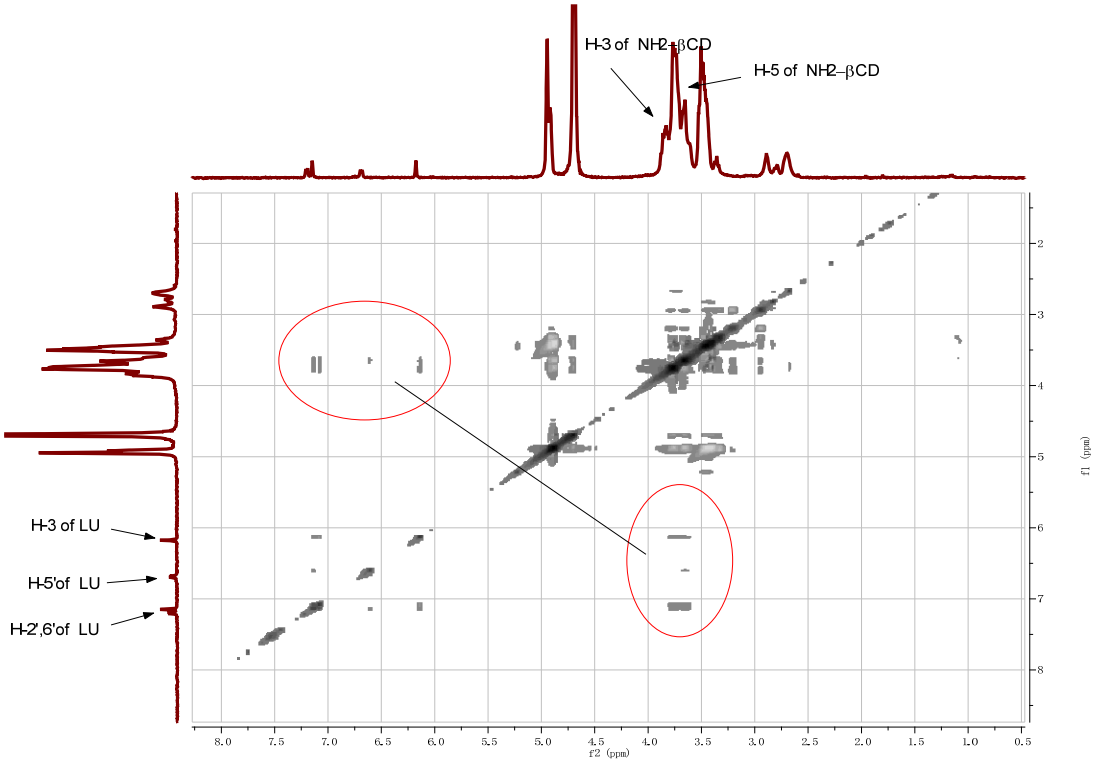


Fig.S11. ROESY spectrum of LU/NH_2-βCD complex in D_2O.

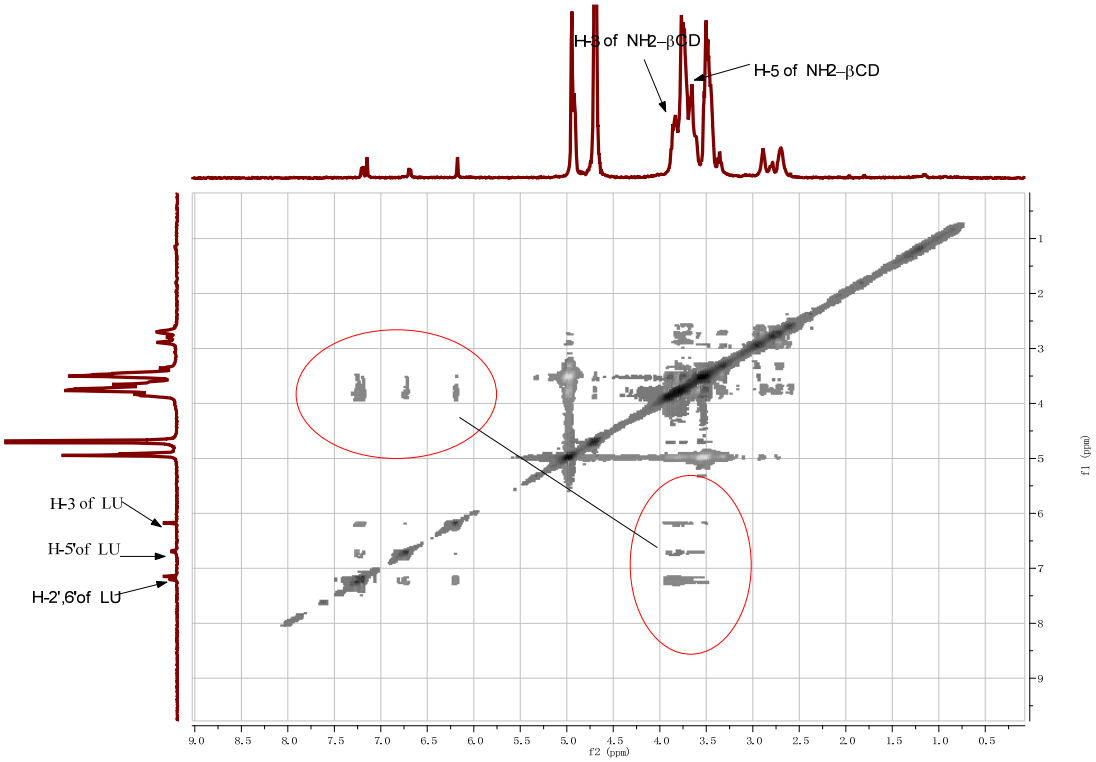


Fig.S12. ROESY spectrum of LU/DETA-βCD complex in D_2O.

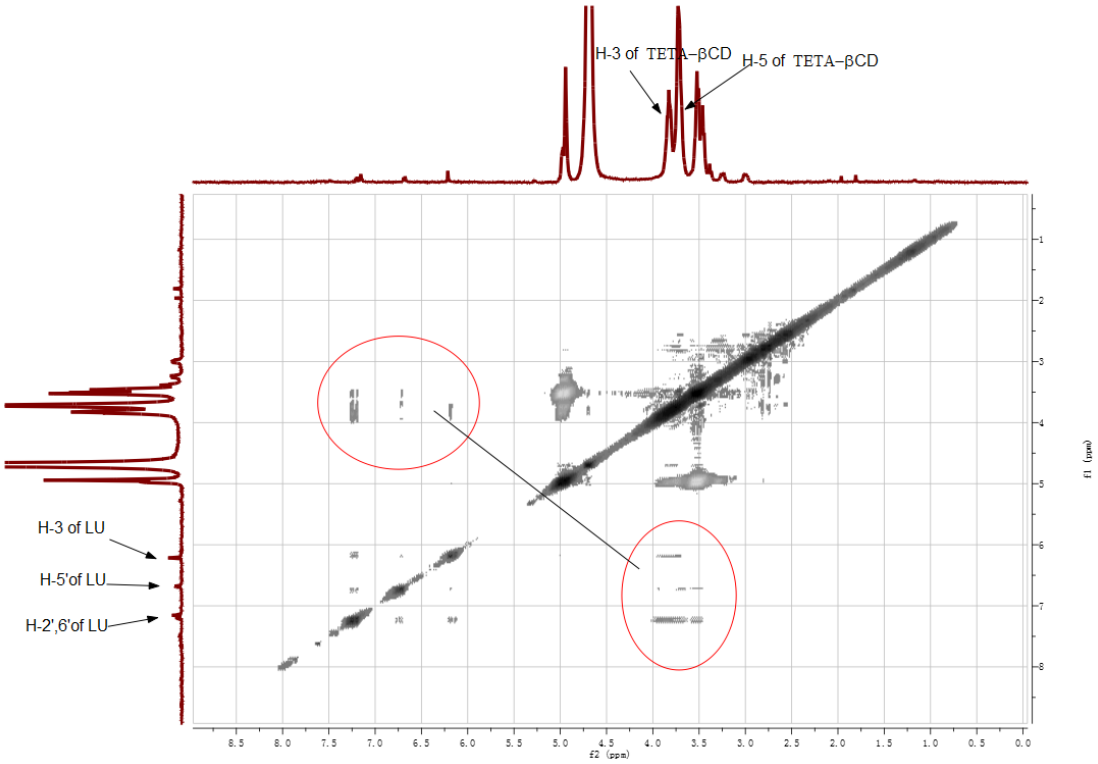
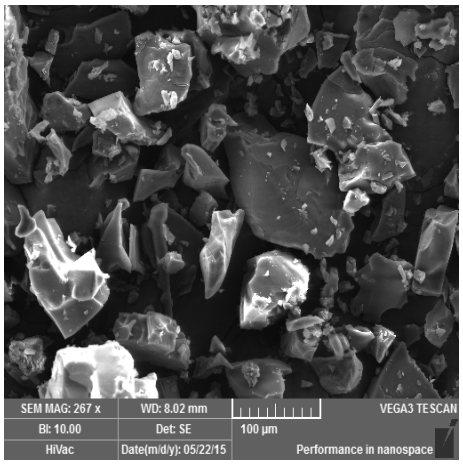


Fig.S13. ROESY spectrum of LU/TETA-βCD complex in D_2O.

(a)



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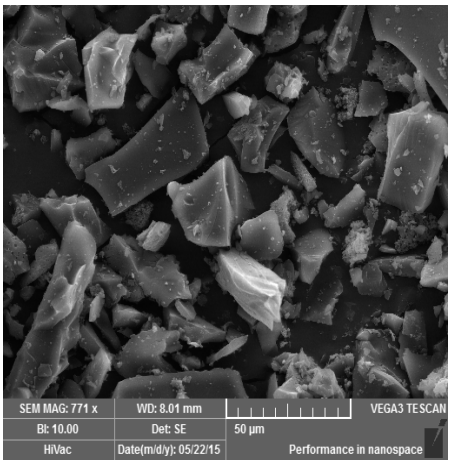

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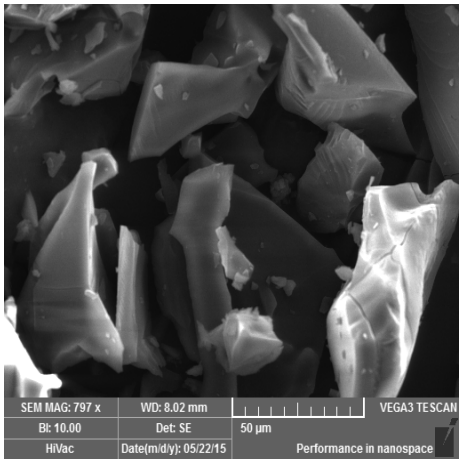

Fig.S14. Scanning electron microphotographs: (a) LU/NH_2 -βCD inclusion complex; (b) LU/EN -βCD inclusion complex; (c) LU/DETA -βCD inclusion complex;