

## **Supporting information**

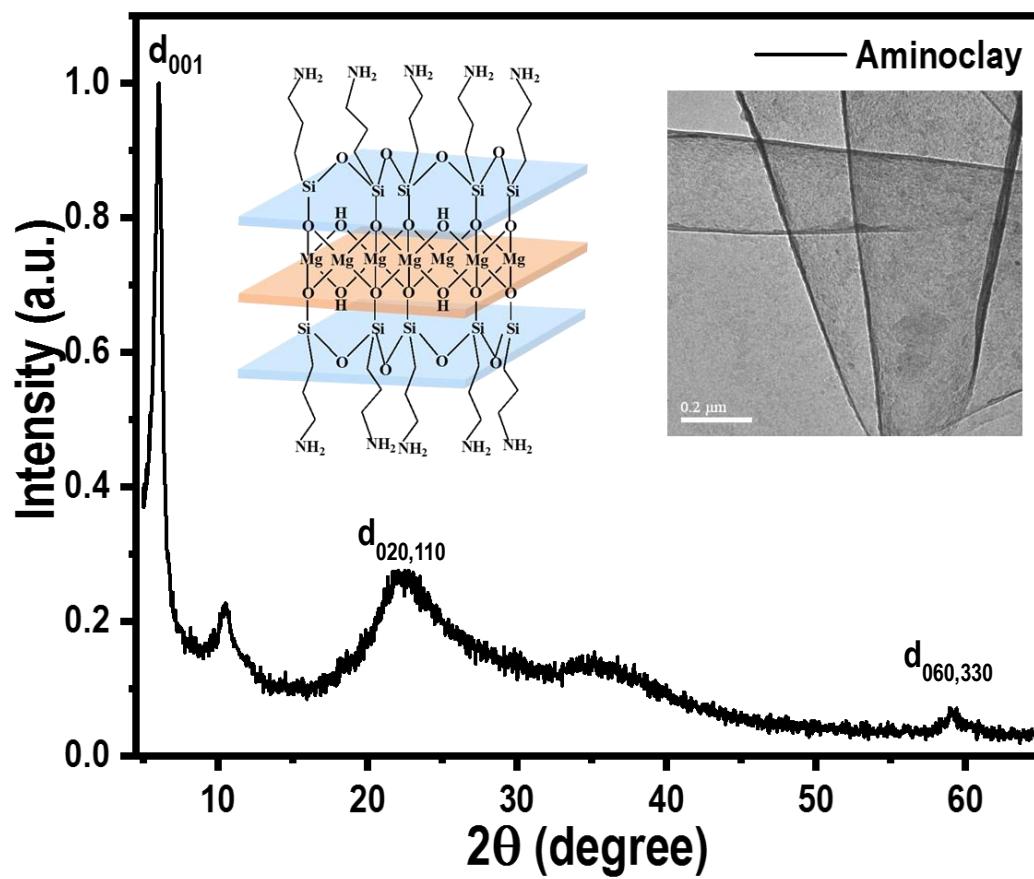
### **Entrapping Atomically Precise Clusters in Cyclodextrin-Functionalized Aminoclay sheets: Synthesis and Enhanced Luminescence**

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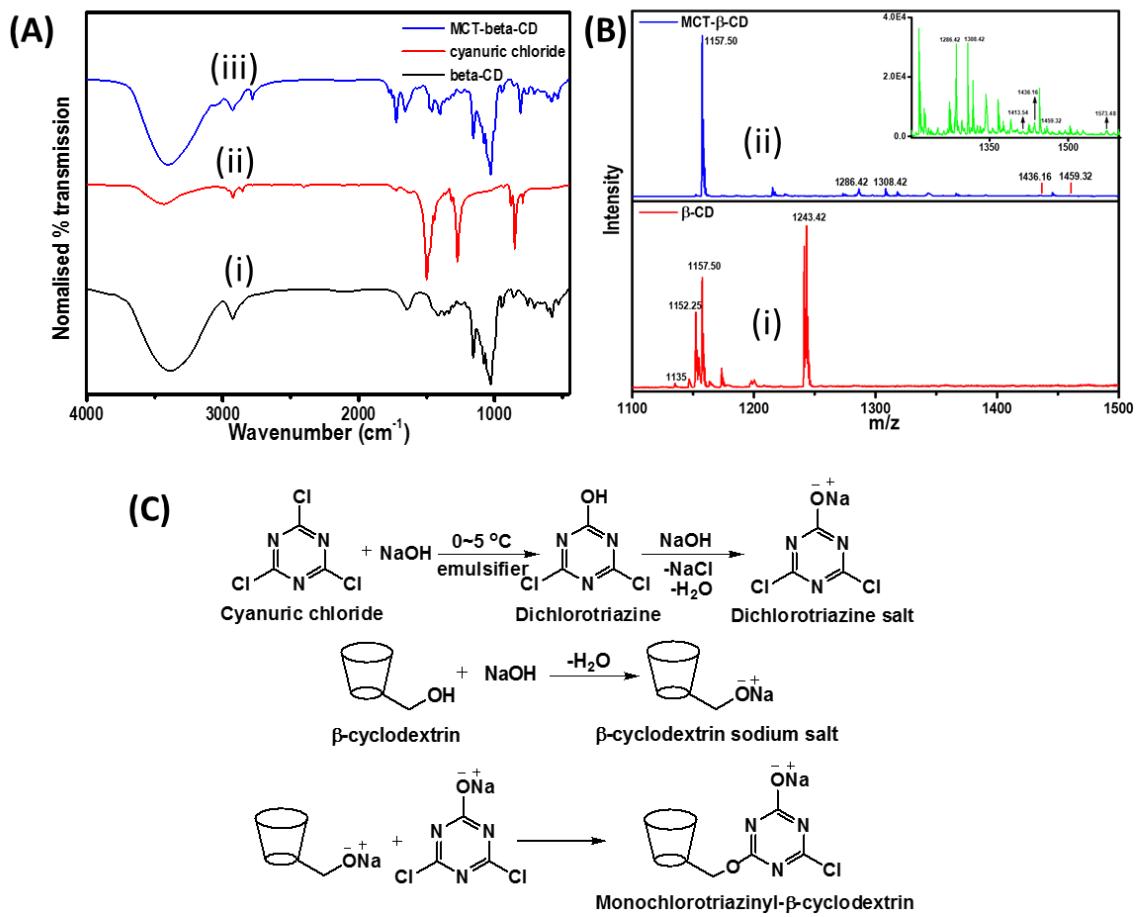
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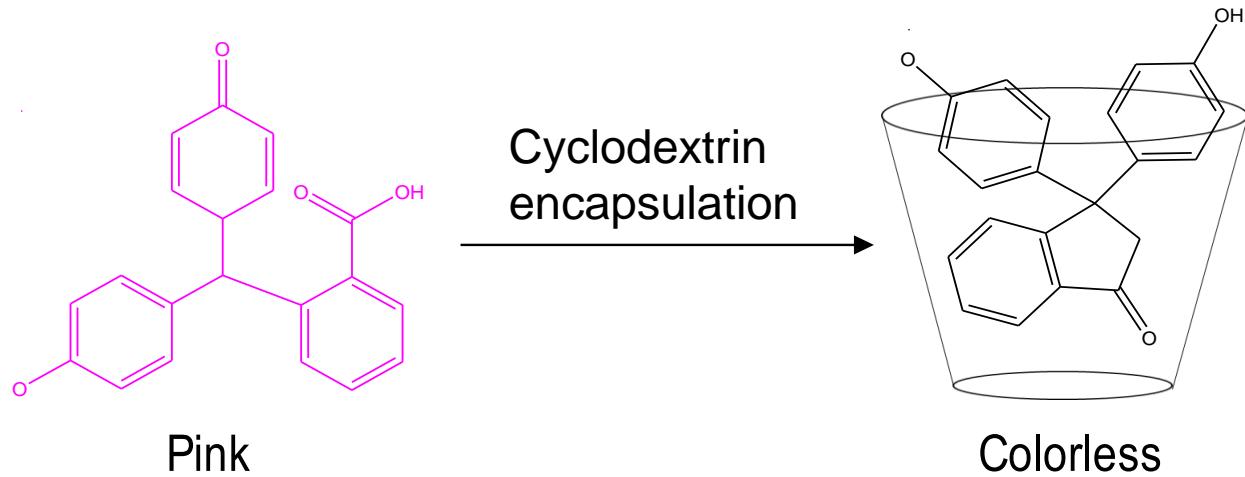
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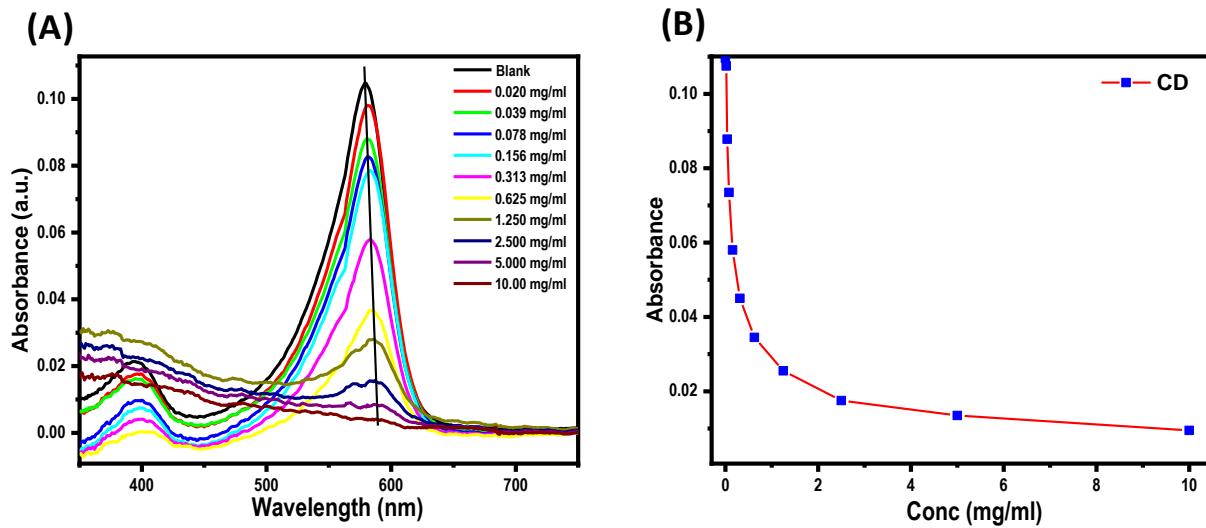
**Figure S1.** XRD pattern of the aminoclay; inset: schematic and corresponding TEM image showing the layered structure.



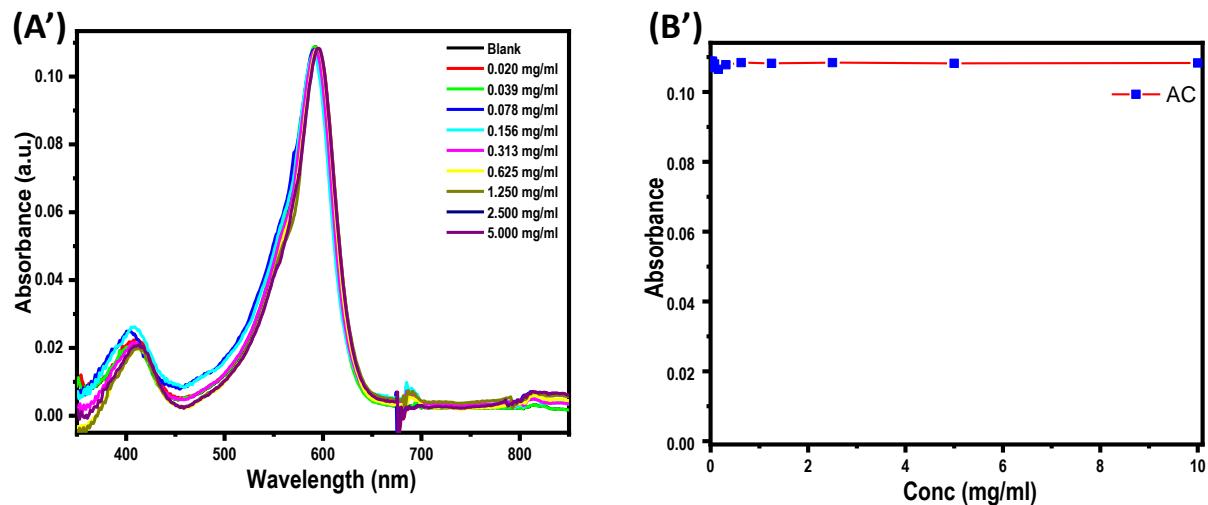
**Figure S2.** (A) FTIR spectra of (i)  $\beta$ -CD (ii) cyanuric chloride and (iii) MCT- $\beta$ -CD. (B) ESI MS of (i)  $\beta$ -CD and (ii) MCT- $\beta$ -CD; inset: corresponding expanded view of ESI MS of MCT- $\beta$ -CD. (C) Schematic procedure for the synthesis of MCT- $\beta$ -CD



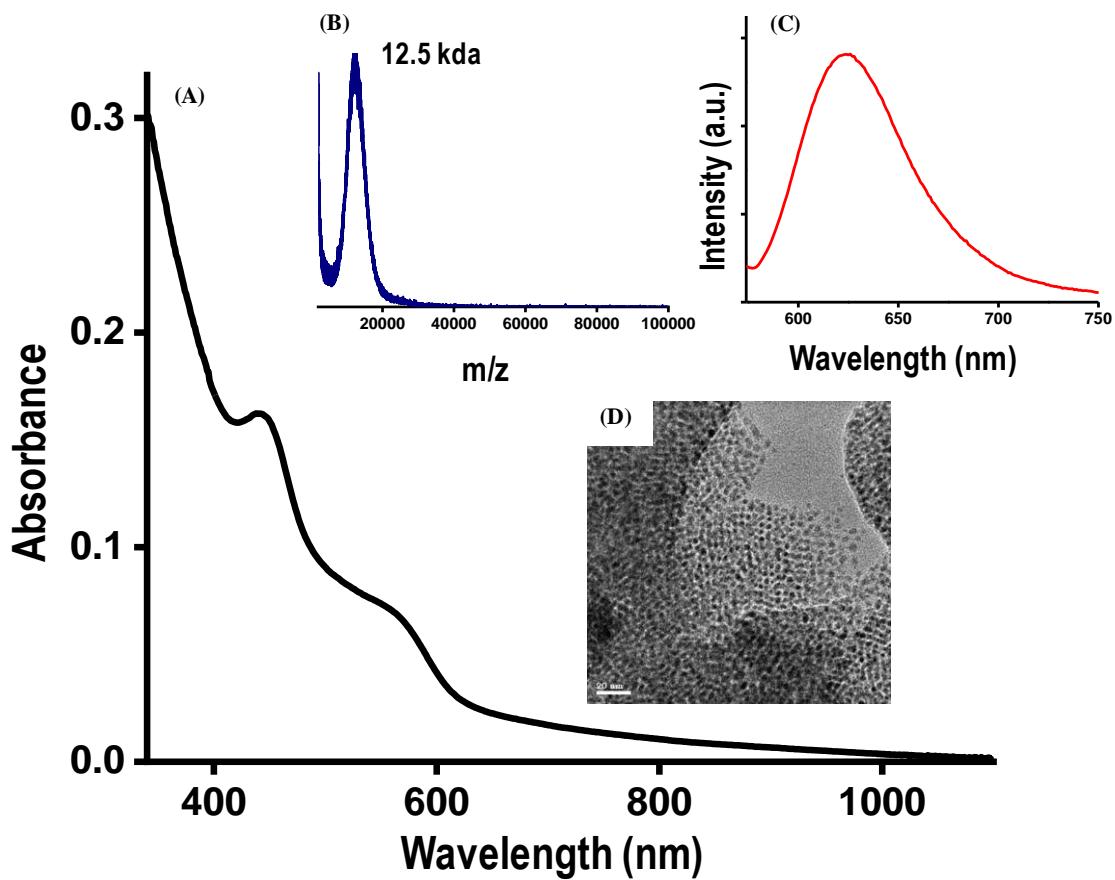
**Figure S3.** Binding of phenolphthalein to cyclodextrin results in the transformation of pink colored dianion of a trigonal sp<sup>2</sup>-conjugated system of phenolphthalein to a colorless lactonoid dianion form having a tetrahedral sp<sup>3</sup> central carbon atom.



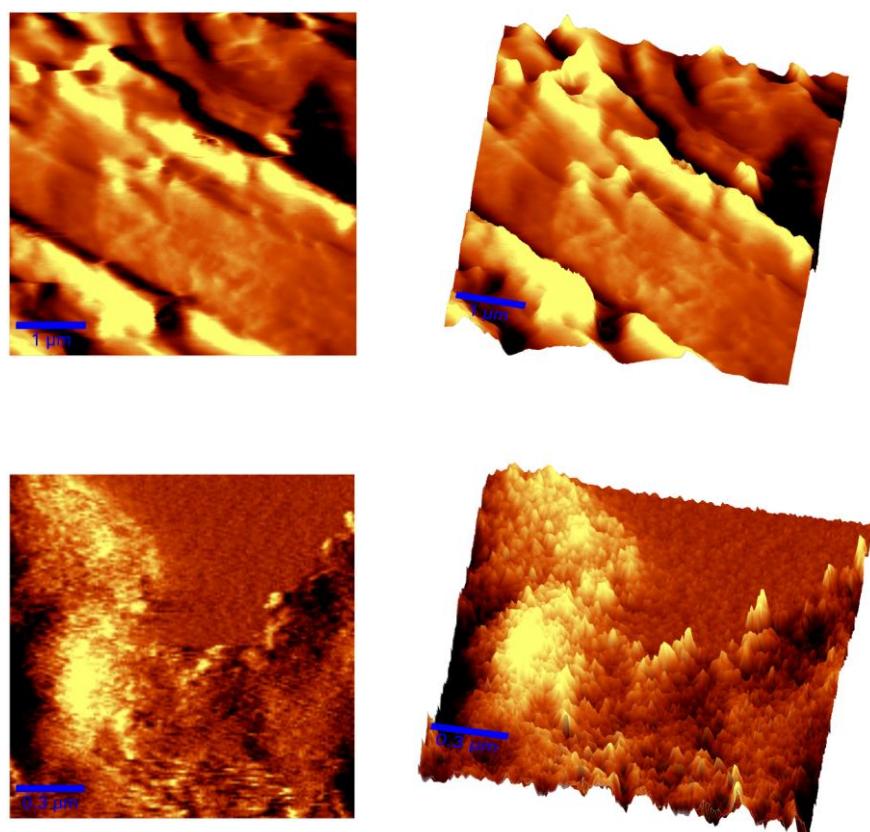
**Figure S4.** (A) UV-vis absorbance of PHTH/CD solutions with increasing CD concentrations.  
(B) Calibration curve of absorbance and CD concentration



**Figure S5.** (A') UV-vis absorbance of PHTH/AC solutions with increasing AC concentrations.  
(B') Calibration curve of absorbance and AC concentration.



**Figure S6.** (A) UV-vis of  $\text{Ag}_2\text{Se}@\text{SBB}$  cluster (B) MALDI MS measured at threshold laser power in negative mode. (C) Emission spectrum of  $\text{Ag}_2\text{Se}@\text{SBB}$  cluster. (D) TEM image of  $\text{Ag}_2\text{Se}@\text{SBB}$  cluster.



**Figure S7.** AFM images of AC-CD