

## Supporting Information

### A functional protein retention and release multilayer with high stability

Kun Nie, Qi An\*, and Yihe Zhang\*

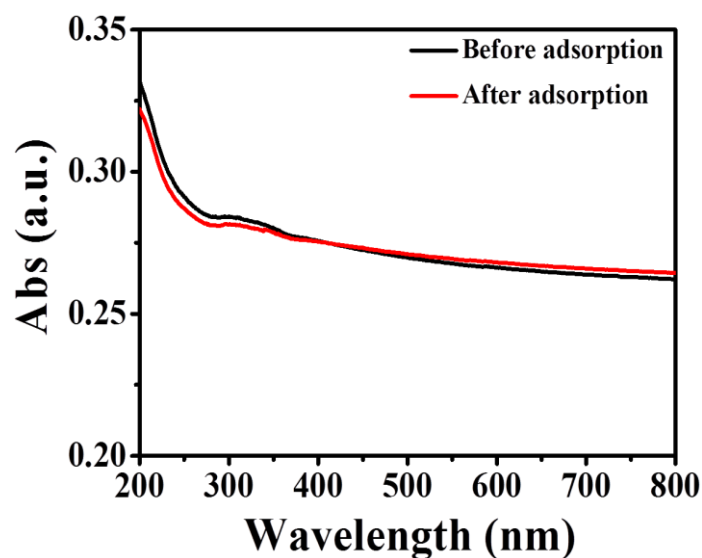


Figure S1 The substrate covered by only polymeric (PAH/PAA)<sub>5</sub>/(PAH/DAS)<sub>5</sub> multilayers displayed no characteristic absorbance for CAT.

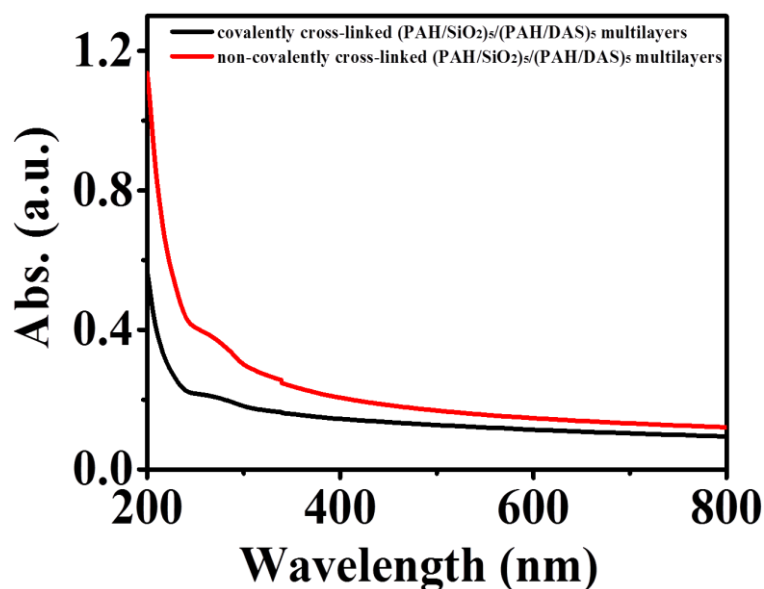


Figure S2 The covalently cross-linked (PAH/SiO<sub>2</sub> NP)<sub>5</sub>/(PAH/DAS)<sub>5</sub> hybrid multilayers loaded smaller amount of CAT compared with the uncross-linked multilayers after the same period of CAT infiltration.

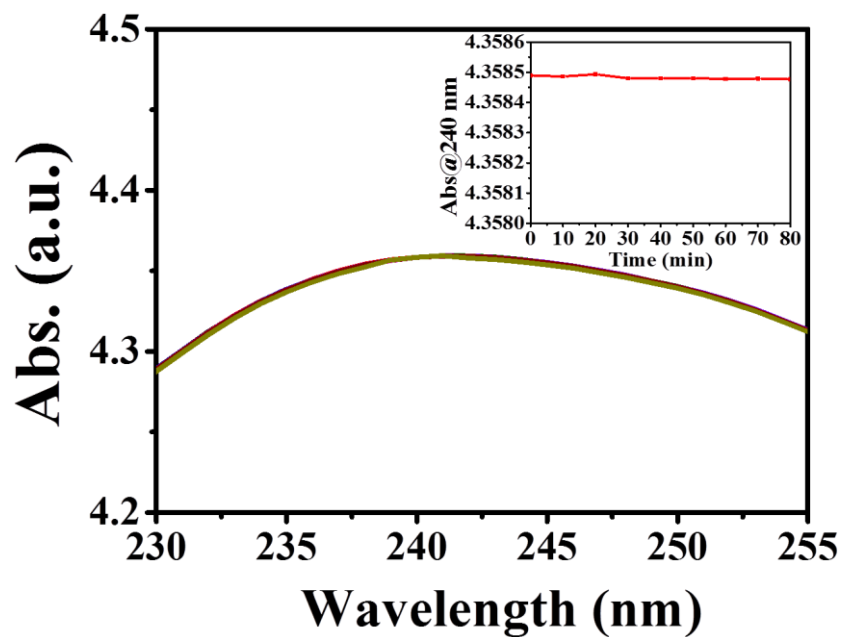


Figure S3 (CAT/PAH)<sub>5</sub>/(PAH/DAS)<sub>5</sub> films assembled without the mesoporous silica reservoir failed to display any catalytic activities towards H<sub>2</sub>O<sub>2</sub> decomposition, indicating that the enzymes therein were deactivated.

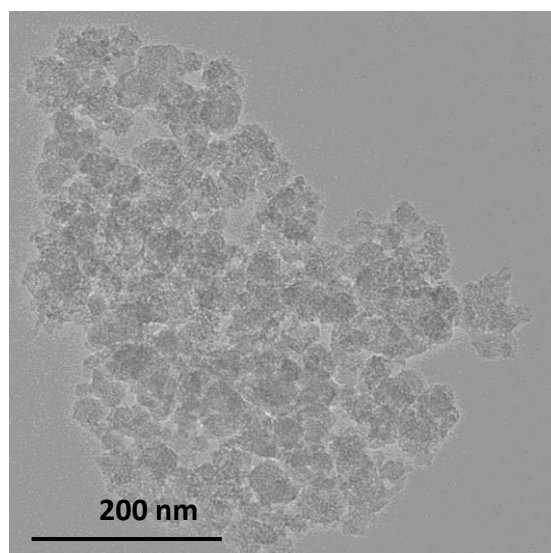


Figure S4 TEM images of mesoporous silica.