Supporting Information

A functional protein retention and release multilayer with high stability

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

Figure S2 The covalently cross-linked (PAH/SiO₂ NP)₅/(PAH/DAS)₅ hybrid multilayers loaded smaller amount of CAT compared with the uncross-linked multilayers after the same period of CAT infiltration.
Figure S3 (CAT/PAH)$_5$/(PAH/DAS)$_5$ films assembled without the mesoporous silica reservoir failed to display any catalytic activities towards H$_2$O$_2$ decomposition, indicating that the enzymes therein were deactivated.

Figure S4 TEM images of mesoporous silica.