

Supporting Information

Polyacrylonitrile/Noble Metal/SiO₂ Nanofibers as Substrates for the Amplified Detection of Picomolar Metal Ions through Plasmon-Enhanced Fluorescence

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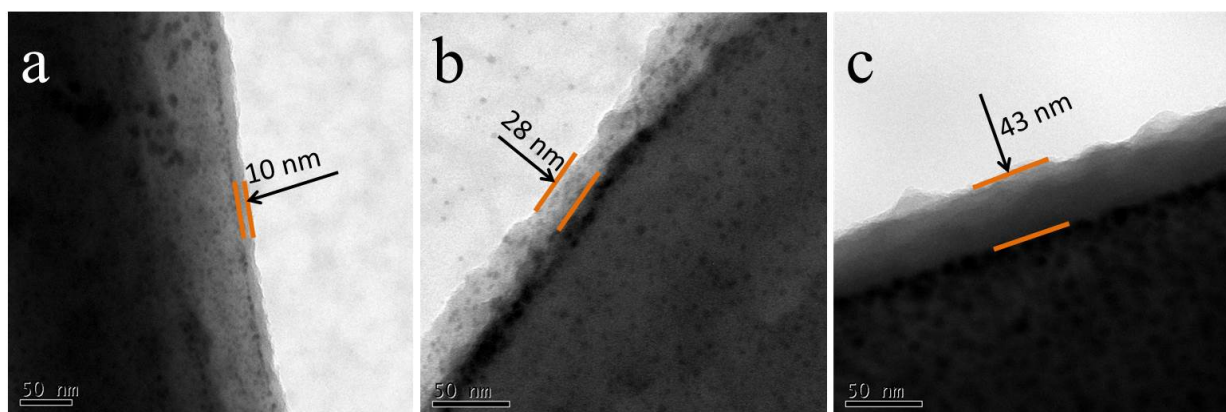


Figure S1. TEM images of PAN/Ag/SiO₂ nanofibers with different silica thickness. a) 160 min; b) 400 min; c) 480 min.

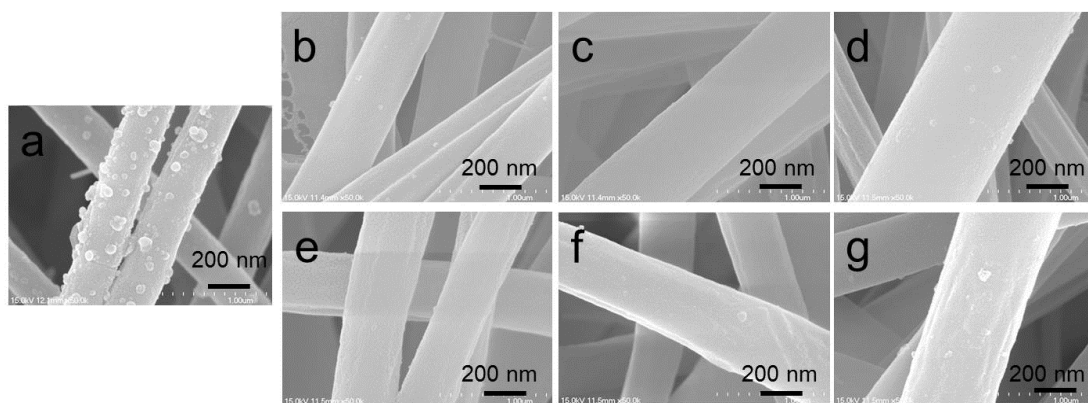


Figure S2. SEM images of PAN/Ag and PAN/Ag/SiO₂ nanofibers with different hydrolysis time of TEOS. a) PAN/Ag nanofibers. b) PAN/Ag/SiO₂ nanofibers-80 min. c) PAN/Ag/SiO₂ nanofibers-160 min. d) PAN/Ag/SiO₂ nanofibers-240 min. e) PAN/Ag/SiO₂ nanofibers-320 min. f) PAN/Ag/SiO₂ nanofibers-400 min. g) PAN/Ag/SiO₂ nanofibers-480 min.

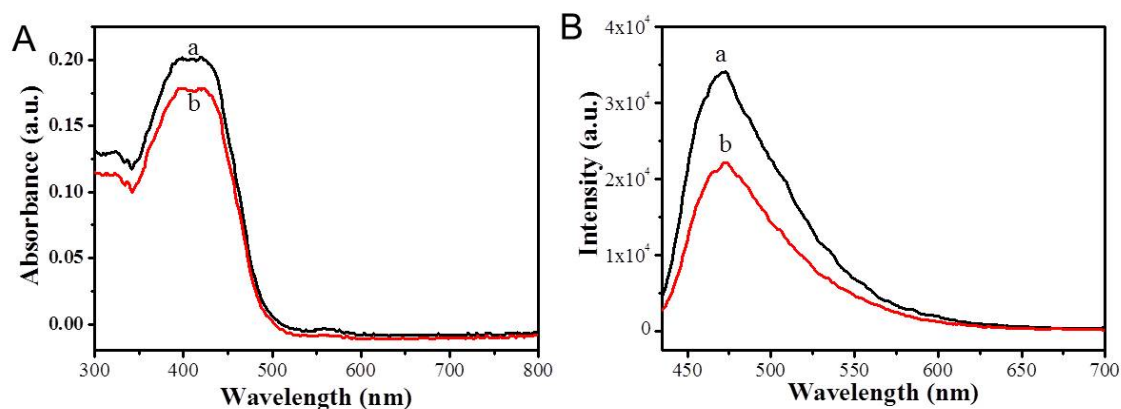


Figure S3. Absorbance (A) and emission (B) spectra of PPESO₃OR solution. Curve a is the absorption and emission of pure PPESO₃OR solution without nanofibrous mat, and then PAN/Ag/SiO₂-320 min nanofibrous mat was fit into the PPESO₃OR solution. Curve b is the absorption and emission of PPESO₃OR solution after removing PAN/Ag/SiO₂-320 min nanofibrous mat. About 35% reduction in fluorescence intensity was observed, indicating that a lot of PPESO₃OR molecules were absorbed on the surface of nanofibrous mat.

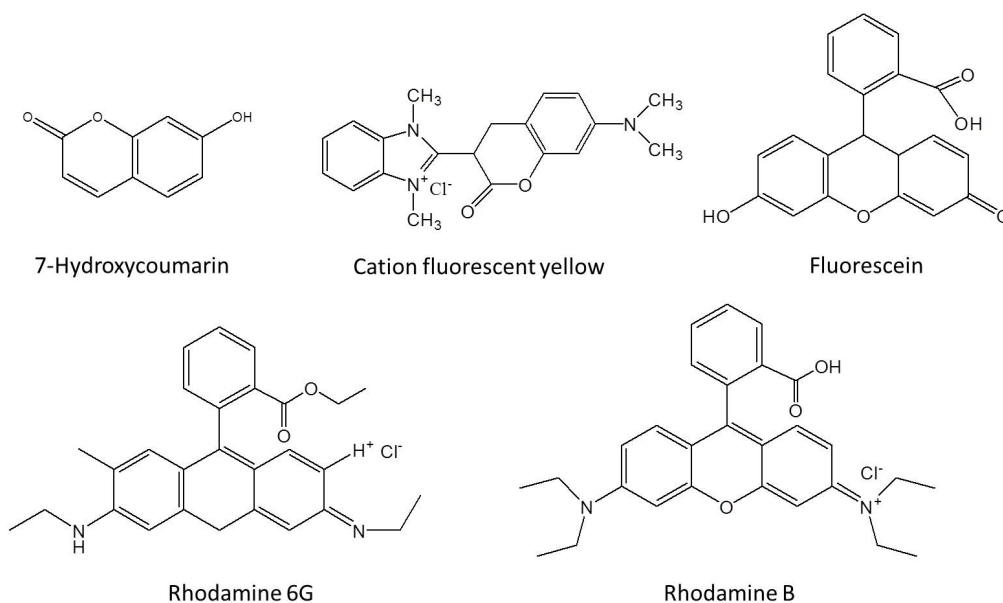


Figure S4. Molecule structures of five dyes.

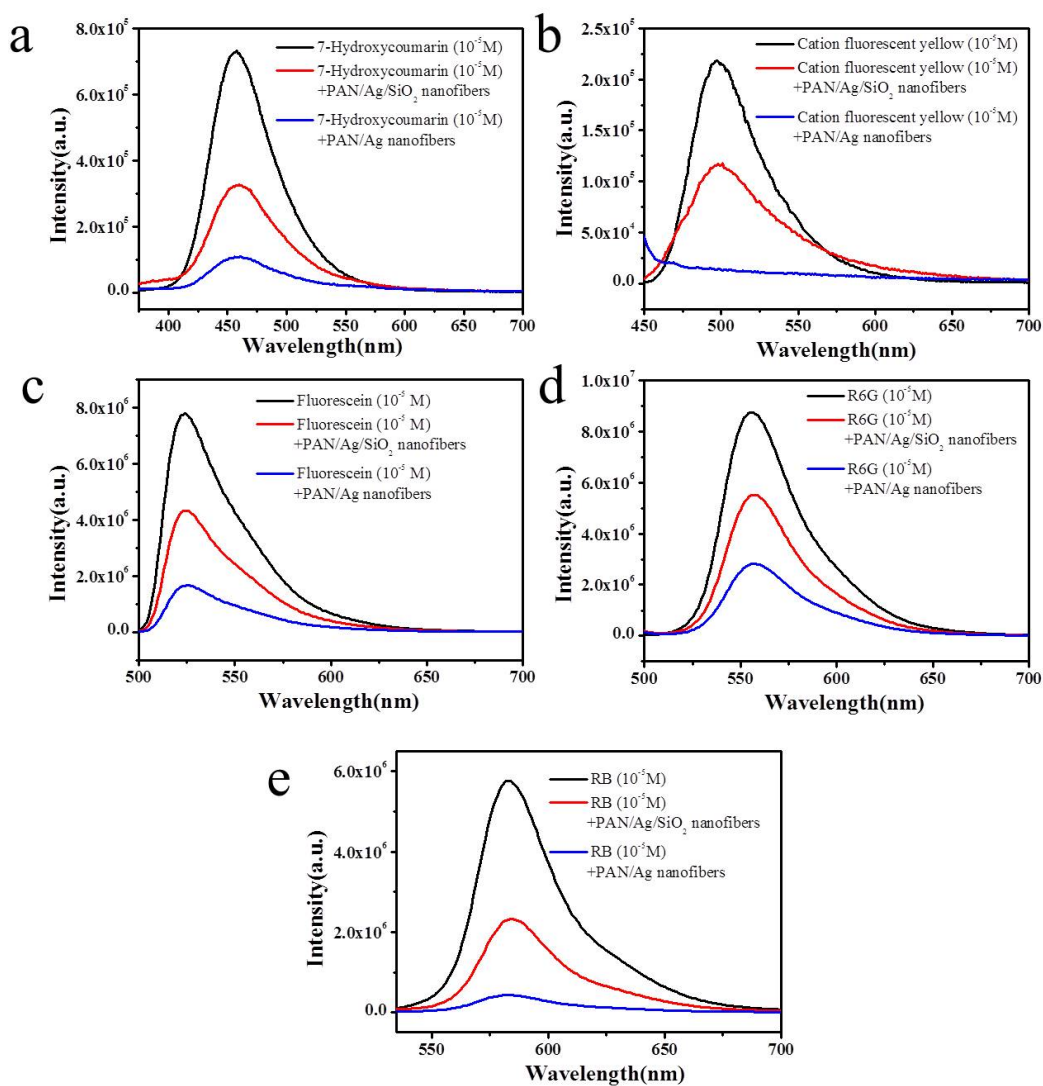


Figure S5. Fluorescent emission spectra of five dyes with and without the presence of PAN/Ag and PAN/Ag/SiO₂ nanofibrous mat. The concentration of other five dyes is 10⁻⁵ M. The thickness of silica is about 20 nm.

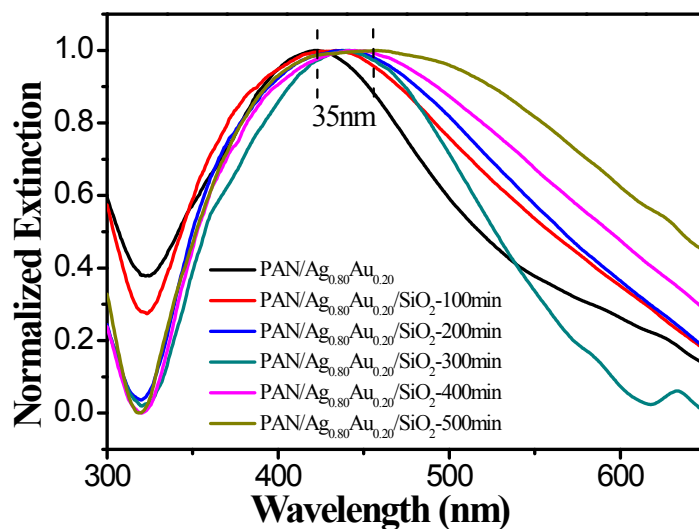


Figure S6. Normalized extinction spectra of PAN/Ag_{0.8}Au_{0.2}/SiO₂ nanofibrous mats.

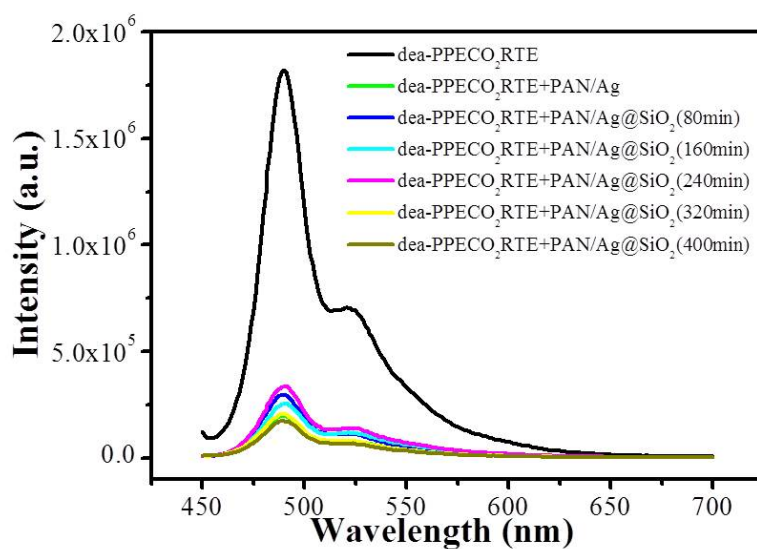


Figure S7. Fluorescent emission spectra of dea-PPECO₂RTE-no Fibers solution and dea-PPECO₂RTE-Fibers solution.

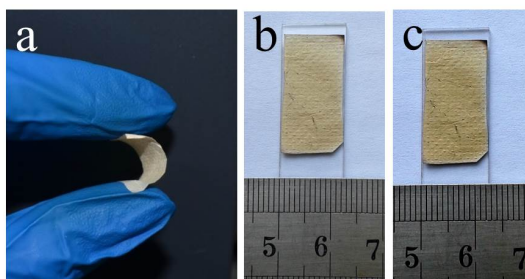


Figure S8. The photos of PAN/Ag/SiO₂ nanofibrous mat. a) Flexible PAN/Ag/SiO₂ nanofibrous mat. b) Before 8 cycles. C) After 8 cycles.