

Supporting Information

TEMPO-Oxidized Nanocellulose Fiber-Directed Stable Aqueous Suspension of Plasmonic Flower- like Silver Nanoconstructs for Ultra-Trace Detection of Analytes

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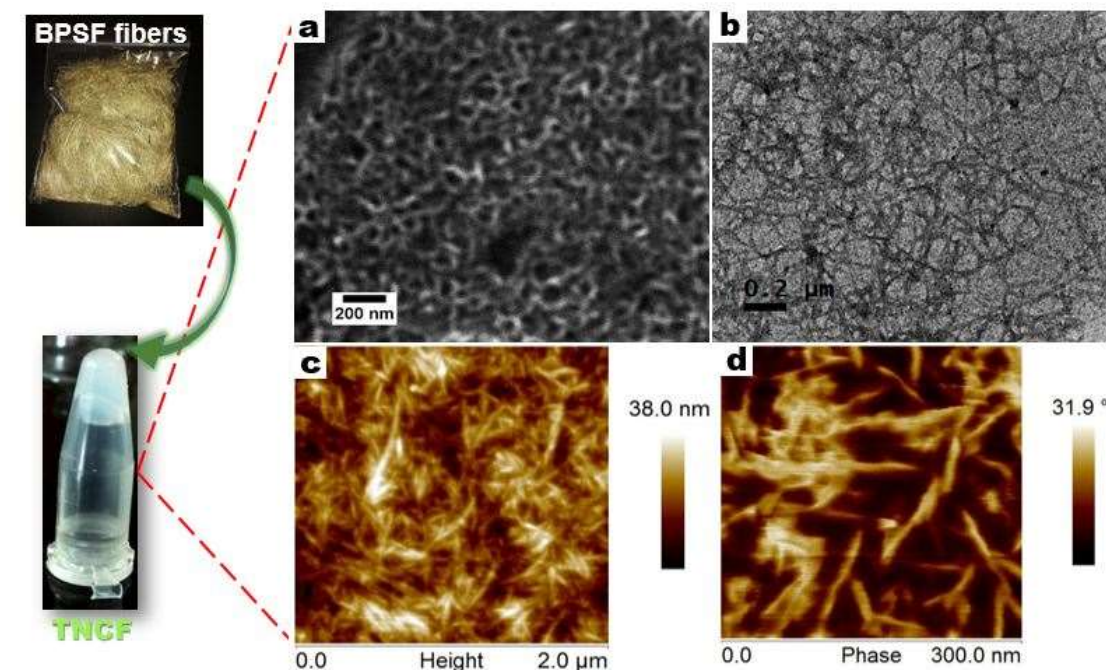


Figure S1. Photographs of banana fibers (left top) and T-NCF extracted from banana fibers (left bottom). (a) SEM, (b) TEM, (c) AFM height image, and (d) corresponding higher magnification phase image of T-NCF.

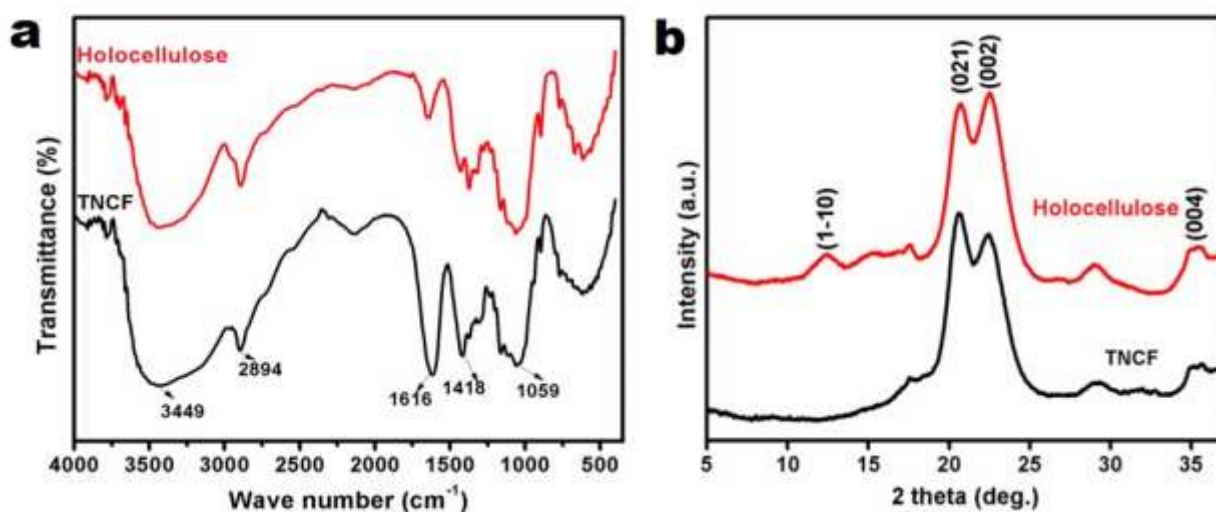


Figure S2. (a) FTIR spectra of holocellulose and TEMPO-oxidized nanocellulose, (b) WAXS pattern of holocellulose, and TEMPO-oxidized nanocellulose fibers.

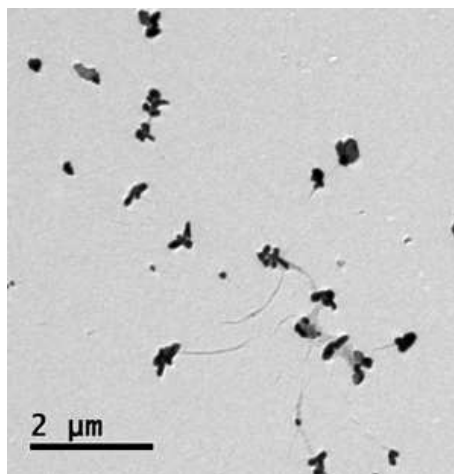


Figure S3. TEM image of AgNF over large area,

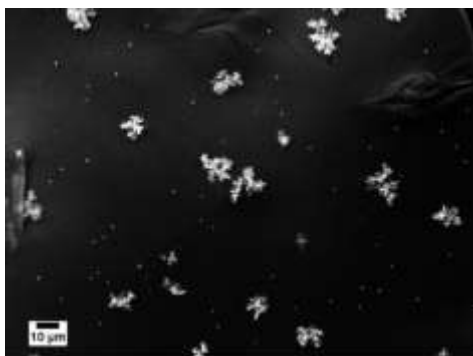


Figure S4. SEM micrograph of highly branched Ag morphology over large area at 0.5 mM Ag^+ ion concentration.

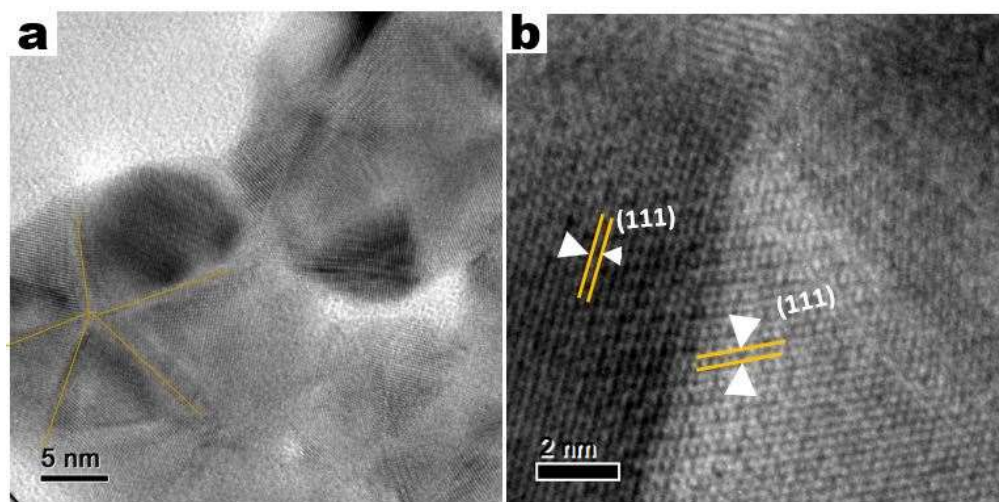


Figure S5. HR-TEM images (a), and (b) of multi-twinned Ag nanostructures formed for sample NC-0.06 at different magnifications

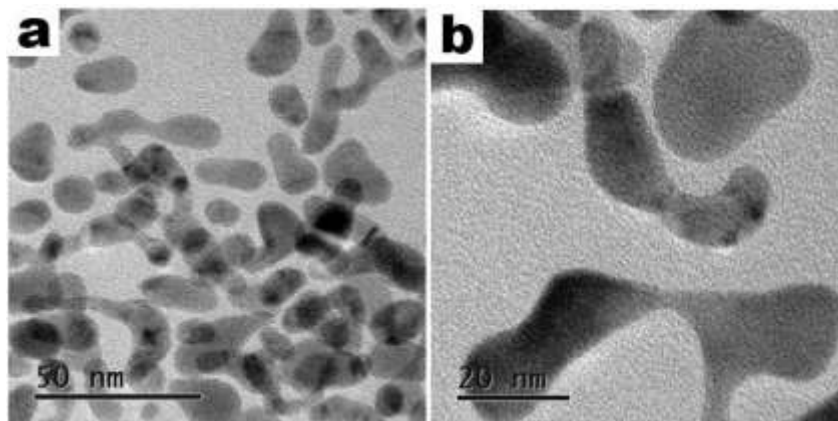


Figure S6. (a) TEM image of the formation of worm-like Ag nanostructure in the preliminary stage of AgNF formation, and b) corresponding higher magnification TEM image.

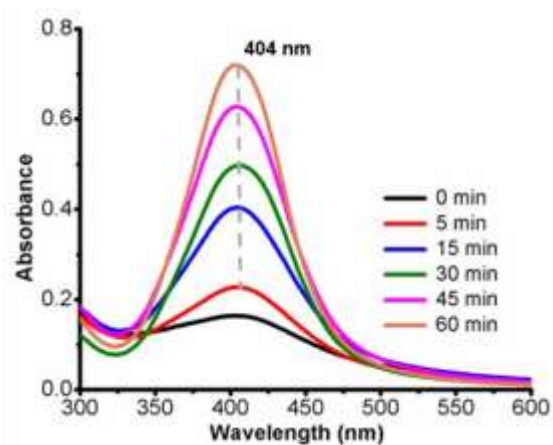


Figure S7. UV-vis spectra taken during the AgNF structure evolution study

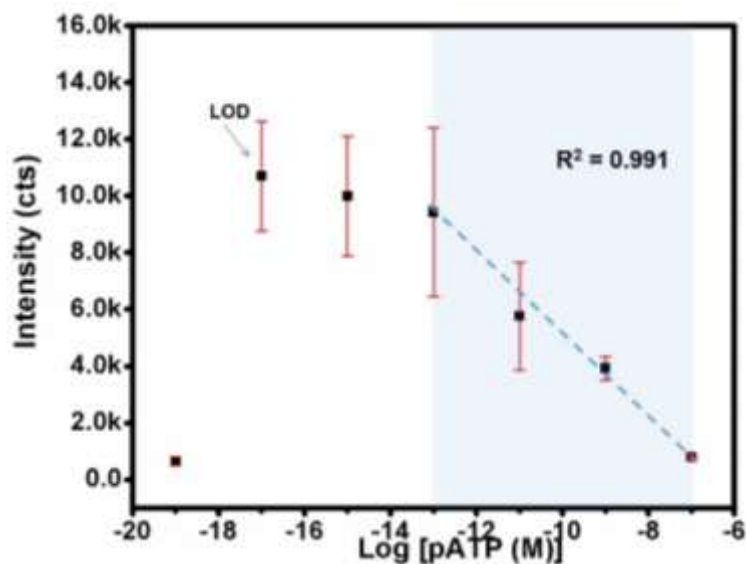


Figure S8. Concentration of pATP vs SERS intensity at 1071 cm^{-1} plot. The linear regression plot with regression coefficient, $R^2 = 0.991$ is shown for quantification region marked as blue area. The error bars calculated for spectra taken from 6 random spots in AgNFs substrate.

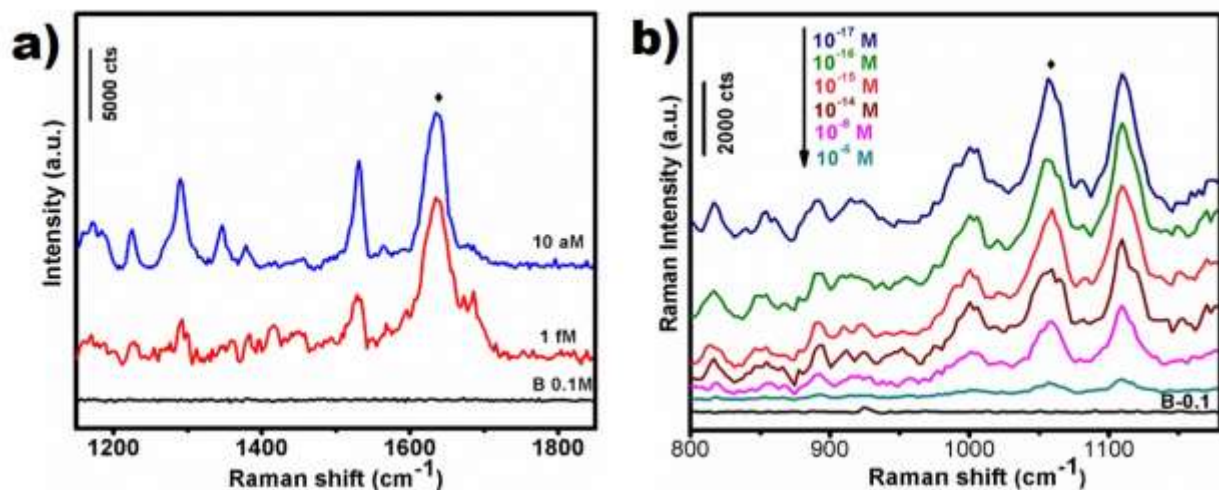


Figure S9. (a) Solid state SERS spectra of MB at different dilutions, and (b) liquid state SERS spectra of pATP

Table S1. An overview of reports on Ag nanostructures as SERS substrate with their lowest detection limit for pATP molecule.

SERS substrate	Detection limit (M)	Ref
Ag/TiO ₂ /rGO nanocomposite	10 ⁻¹⁴	1
Ag nanopolyhedra on tapered fiber probe	10 ⁻⁹	2
Ag nanotriangle loaded film	10 ⁻⁸	3
Assembled spherical AgNPs	10 ⁻¹⁰	4
Ag/Au microtubes with sharp-edge nanosheets	6.0 X 10 ⁻¹⁰	5
Ag film	10 ⁻¹¹	6
Ag on TiO ₂ nanograss	10 ⁻¹²	7
AgNF/TNCF	<10 ⁻¹⁷	Present work

References

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