ADVANCED MATERIALS

Supporting Information

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Metallic Nanobrushes Made using Ambient Droplet Sprays

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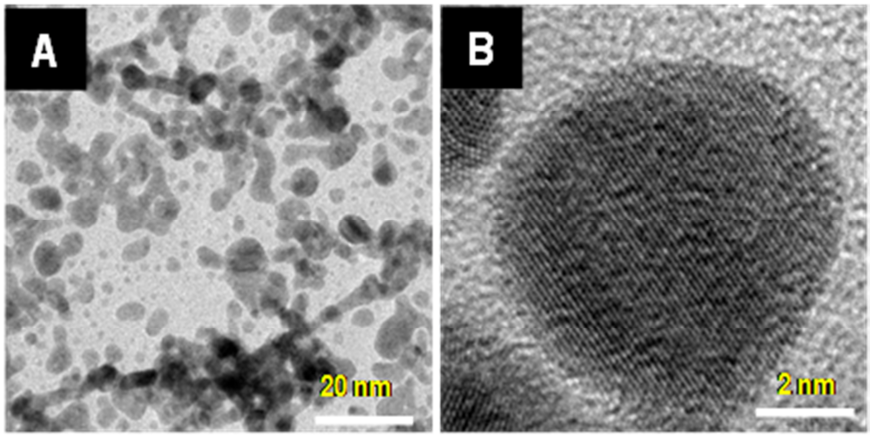

Figure S1. A) TEM image of AgNPs formed on a carbon coated TEM grid, B) HRTEM shows the Ag (111) lattice plane in a single NP.

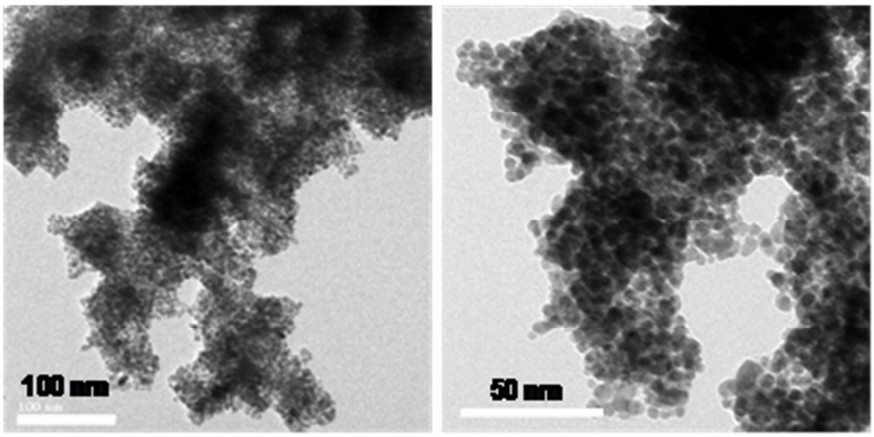

Figure S2. TEM image of Ag brush, formed by accumulation of uniform AgNPs. Images A and B are at different magnifications. In some instances, single NP strings (comprised of 6 nm NPs) have been observed to coalesce to create these nanobristles (as shown in Figure 1).

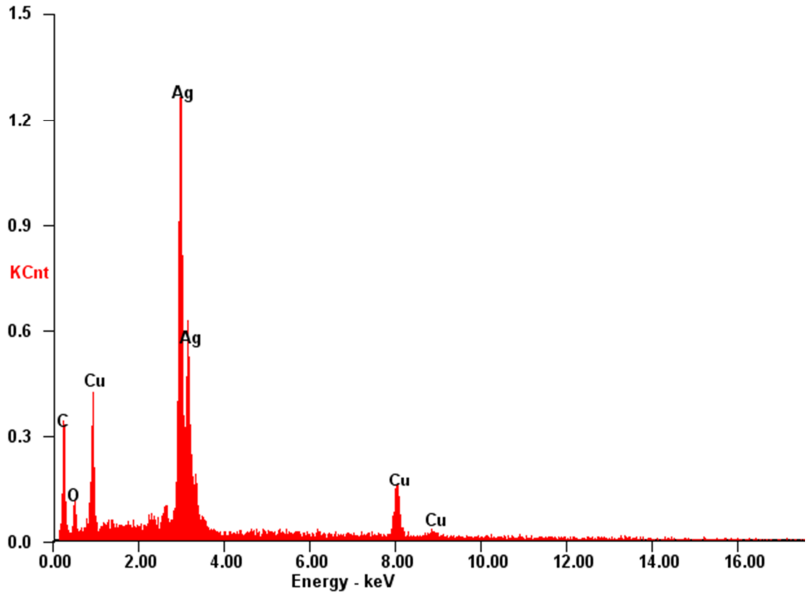

Figure S3. SEM EDS spectrum showing the presence of silver. Cu is from the grid.

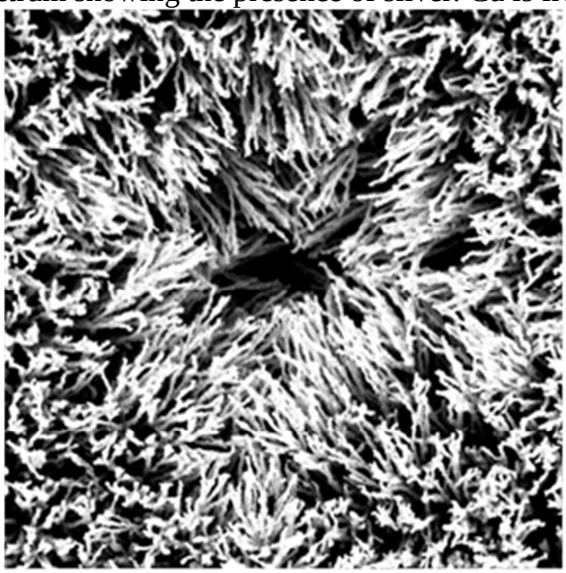

Figure S4. Deposition of 10mM silver acetate at a constant current of 100nA for 7 h, forming 70-80 micron long nanowires which almost completely block a100 micron square grid element.

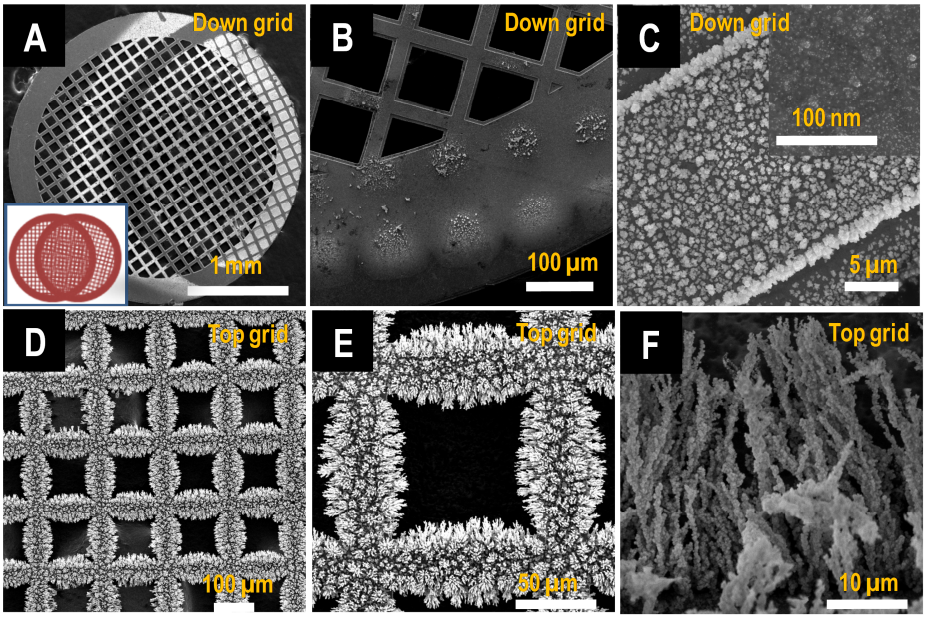

Figure S5. Experiment done using two grids. SEM images at successive magnifications A), B), and C) show formation of NPs on the bottom rim whilst NWs which assemble into nanobrushes form on the top grid as seen in SEM images D), E), and F. Inset in A shows the schematic of the grid position in the experiment.

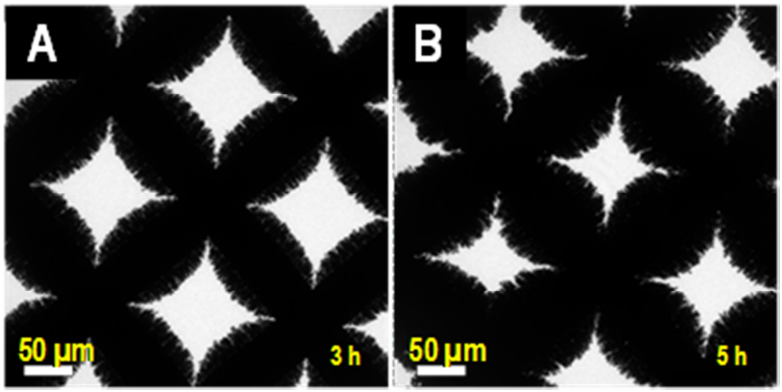

Figure S6. TEM images of Ag brushes formed by electrospray deposition of 10 mM aqueous AgOAc solution, at different times.

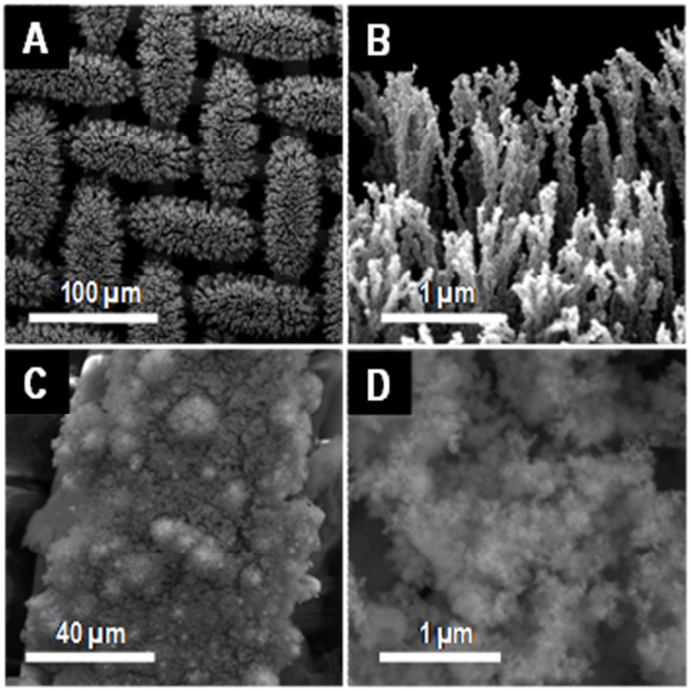

Figure S7. A), B) SEM images of Ag brushes on stainless steel wire mesh and C), D) SEM image of Ag deposition on cotton cloth. No brush-like growth is seen in C and D.

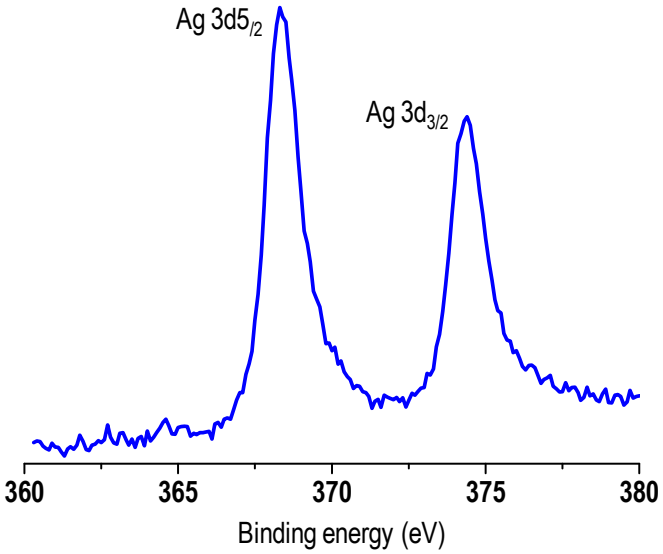

Figure S8. X-ray photoelectron spectrum of Ag brush in the Ag 3d region.

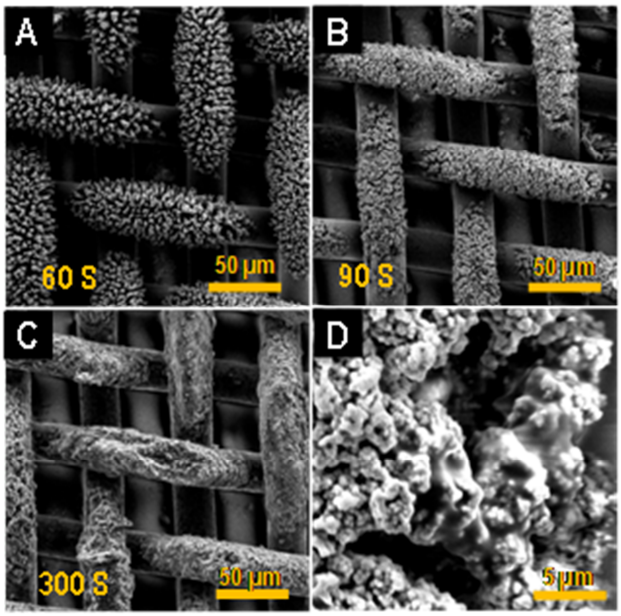

Figure S9. A), B) and C) SEM image of Ag brushes after particulate matter ($PM_{2.5}$) collection, with increasing time of collection, and D) higher magnification SEM image of the sample shown in C.

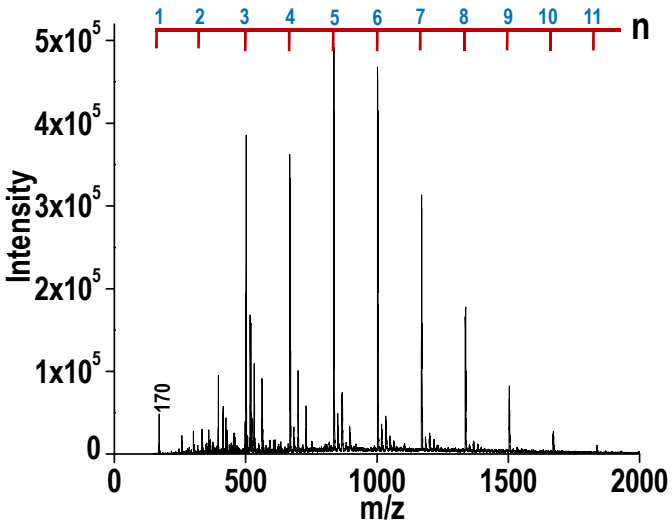

Figure S10: Polymerization of DPA on AgPd NPs. It shows a relatively low conversion efficiency compared to NWs.

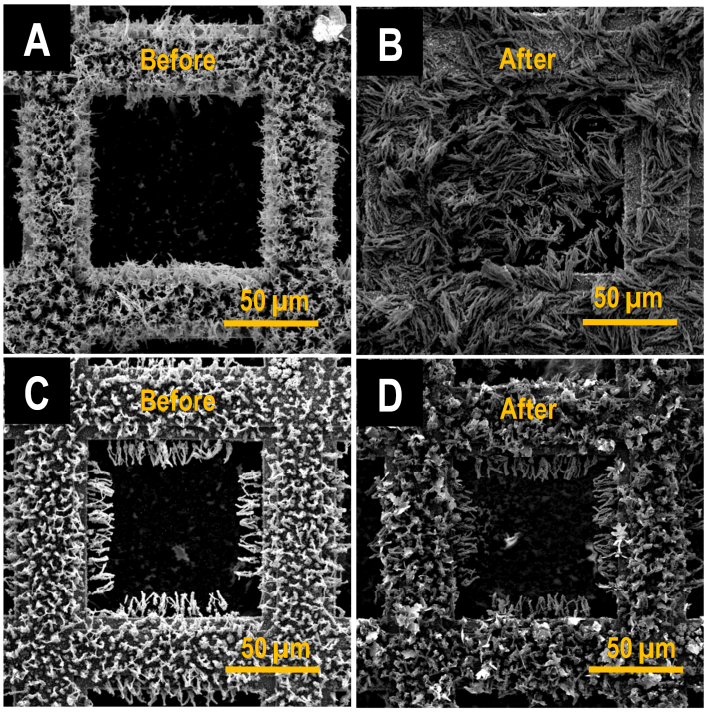

Figure S11. A) and B) SEM image of a Ag nanobrush on a TEM grid stabilized with 1,8-octanedithiol before and after washing in water; C) and D) SEM images of the same, but in this case the grid was pre-treated with 1,8-octanedithiol before building the nanobrush.