Electronic Supplementary Material (ESI) for Environmental Science: Nano.

Supporting information for

Nylon fabric coated with a silver nanowire network covered by graphene oxide sheets serves as an electrostatic air filter for highly efficient particulate matter removal

Table S1. The average diameter, concentration, length, and yield of silver nanowires were estimated using the UV-Vis method.

Diameter (nm)	Length (μm)	Concentration (mg mL^{-1})	Yield (%)
102.2	50-90	41.1	66.6

Table S2. Unit prices of the materials that have been used in this experimental.

Materials	Silver nanowire	Graphene oxide	Commercial nylon
Unit prices	0.10 dollars mL^{-1}	0.0028 dollars mg^{-1}	0.0014 dollars cm^{-2}

Cost accounting for the AGON filter.

The cost accounting in this study includes the cost of materials, energy, and labor.

(1). The cost of energy. It take us 0.20 dollar for 1 kW h^{-1}. According to the fabrication of the AGON filter, it costs us 0.18 dollars for 120 ^{o}C for 15 min (0.9 kW h^{-1}).

(2). For the fabrication process of AGON (100 cm^2), one person would spend 1 hour to complete it, and the labor cost was 0.38 dollars h^{-1} (in Thailand). It takes 0.38 dollars to fabricate 100 cm^2 AGON with a conductivity of 4 Ω sq^{-1}

(3). The total cost of water and solvent cleaning process was 0.05 dollars.

(4). The total cost of the AGON filter was 181 dollars m^2. ((0.1 x 10) + (0.0028 x 20) + (0.0014 x 100) + 0.18 + 0.38 + 0.05)

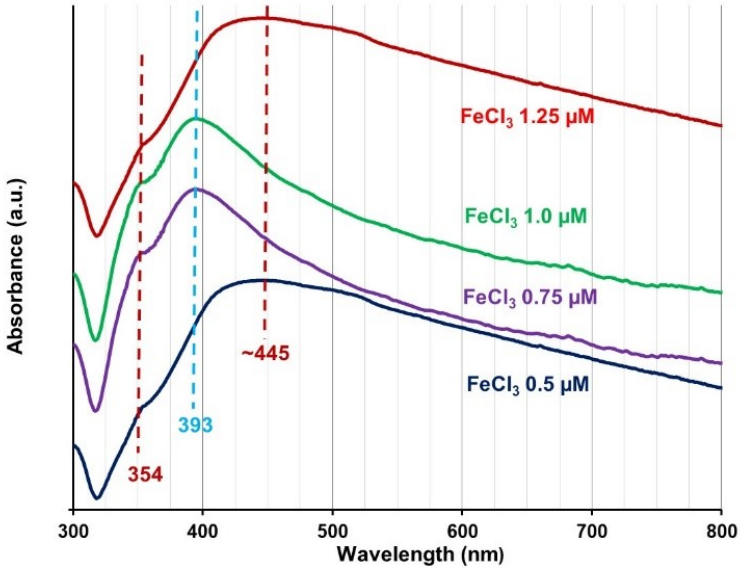

Figure S1. UV-vis absorption spectra of silver nanowires at different concentrations of $FeCl_3$.

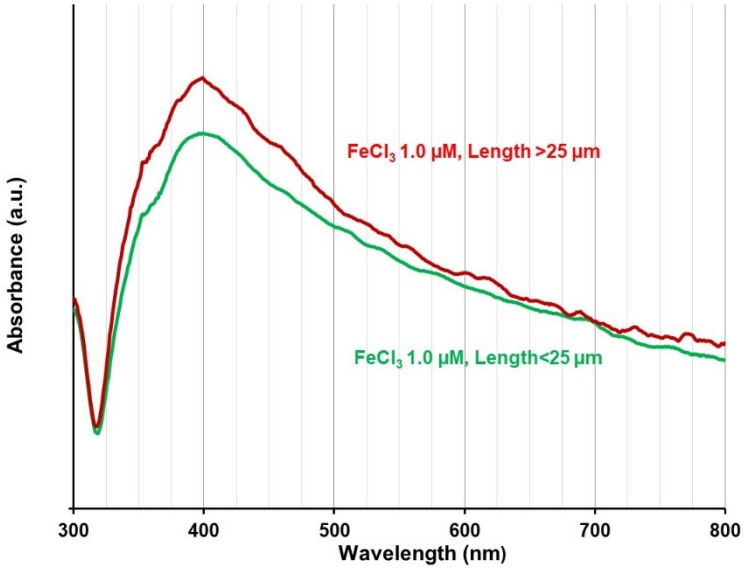

Figure S2. UV-vis absorption spectra of silver nanowires after filtration with nylon fabric of 25 µm pore size.

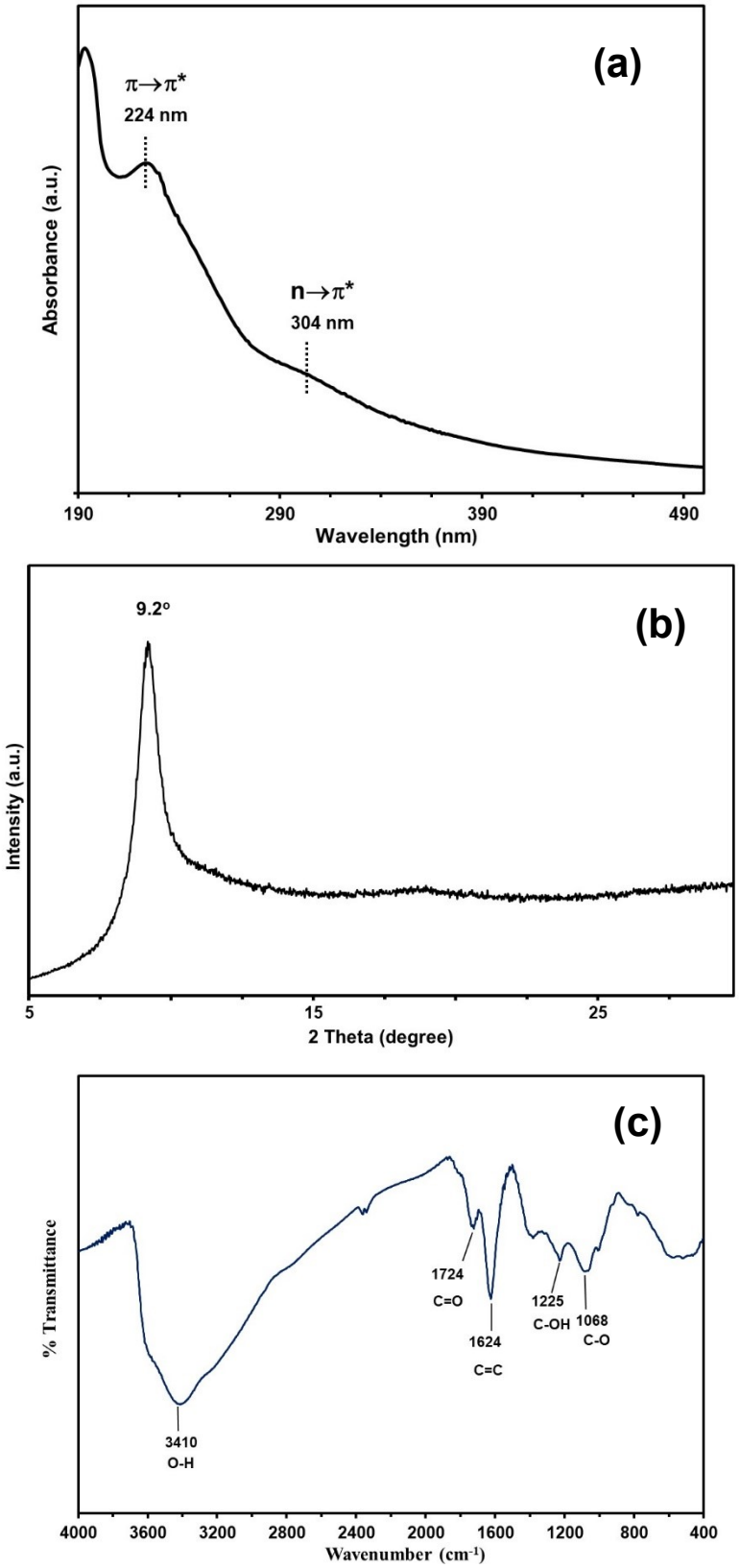

Figure S3. (a) UV-vis spectra, (b) XRD, and (c) FT-IR of graphene oxide

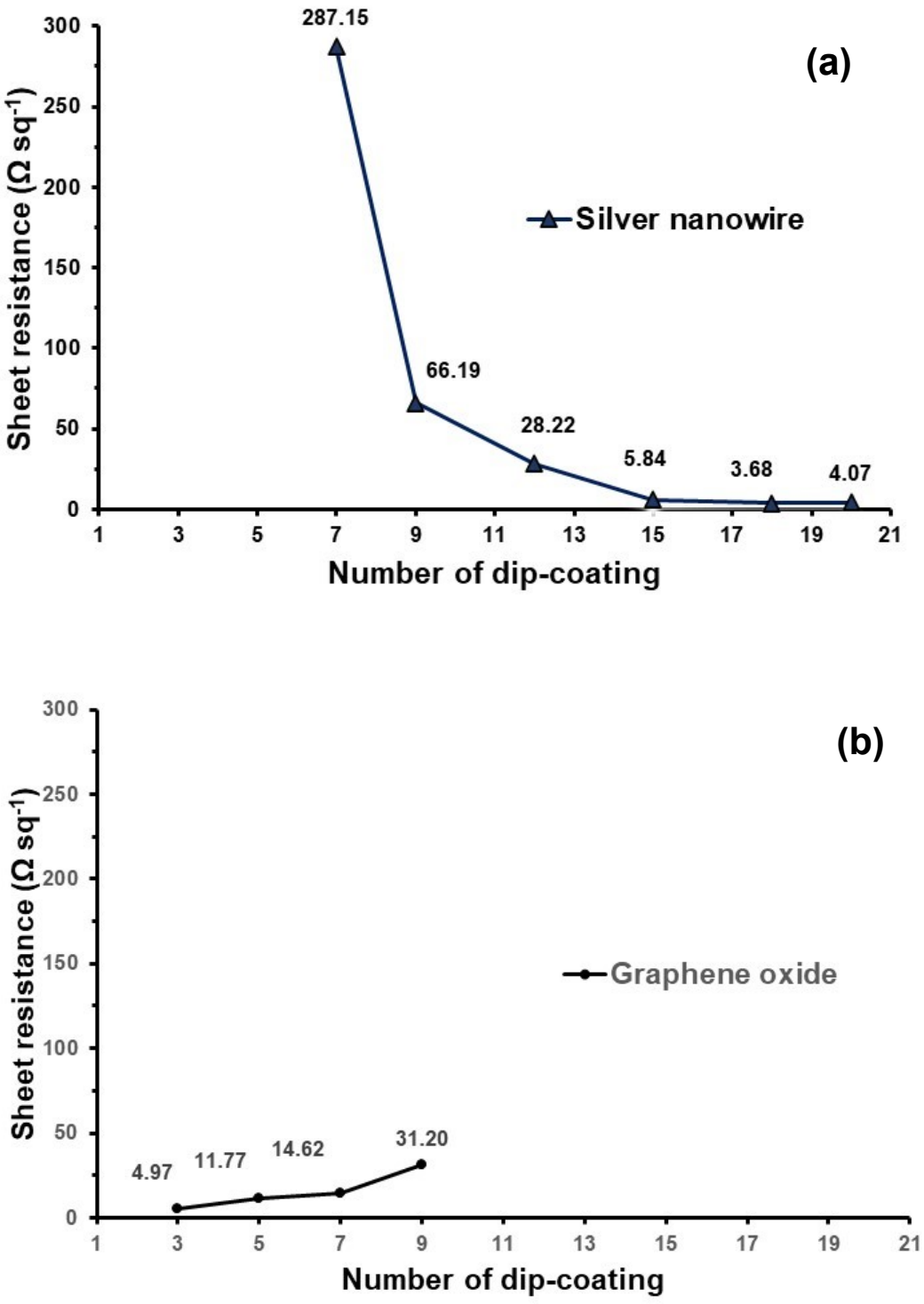

Figure S4. (a) sheet resistance of a silver nanowire percolation network on nylon fabric as a function of different dip-coating cycles at a concentration of 8 mg mL^{-1} (b) sheet resistance of a silver nanowire percolation network coated with graphene oxide with different dip-coating cycles at a concentration of 1 mg mL^{-1}.

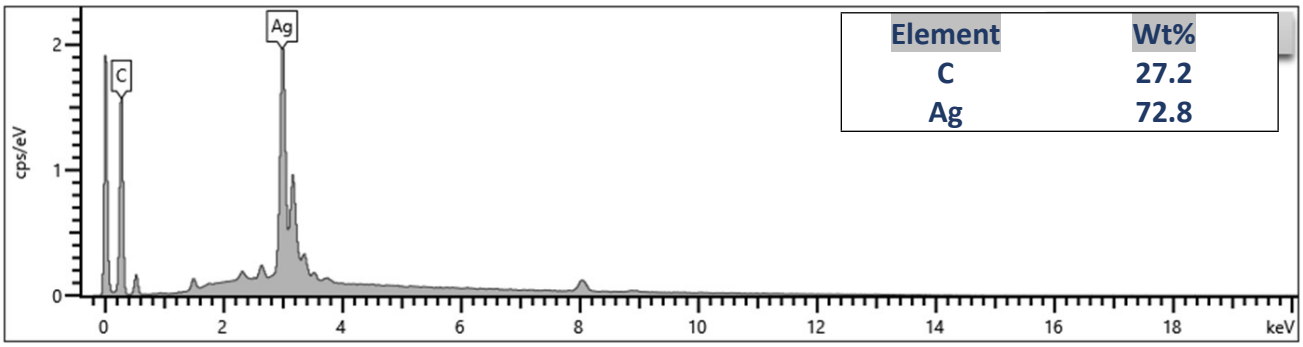

Figure S5. EDS spectrum and element weight percentages of carbon and silver.

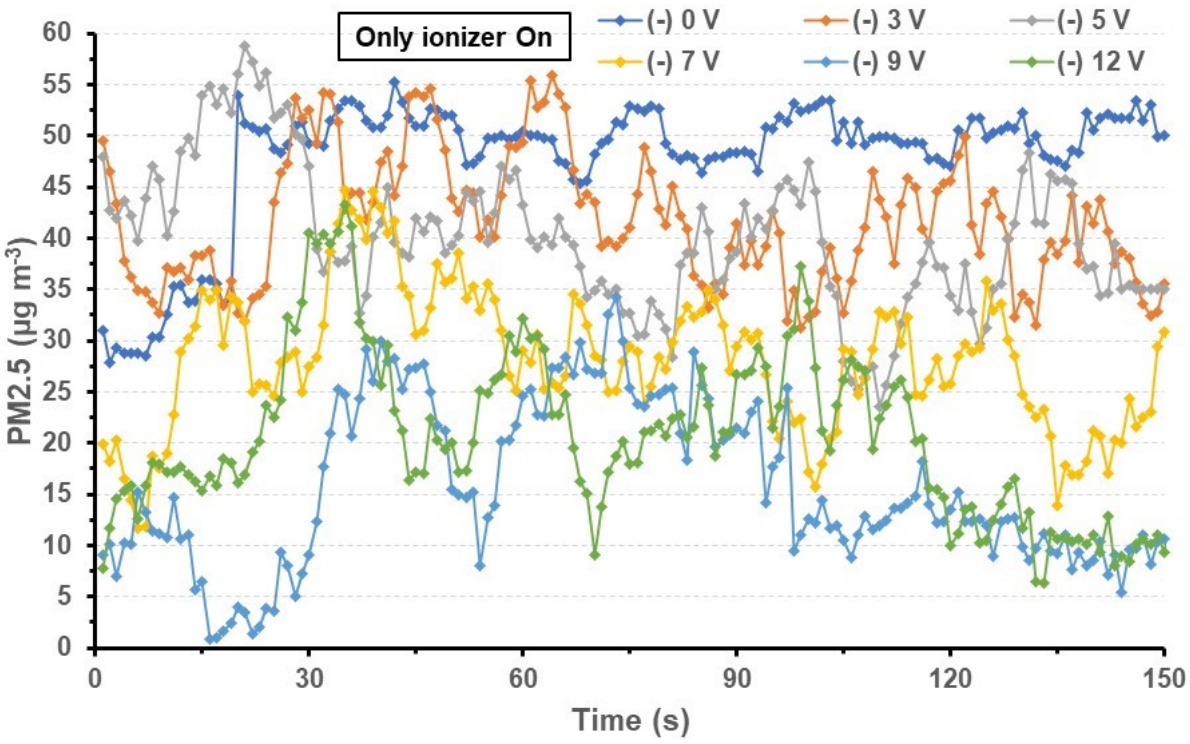

Figure S6. Transient evolution of PM2.5 density for various ionizer voltage conditions.

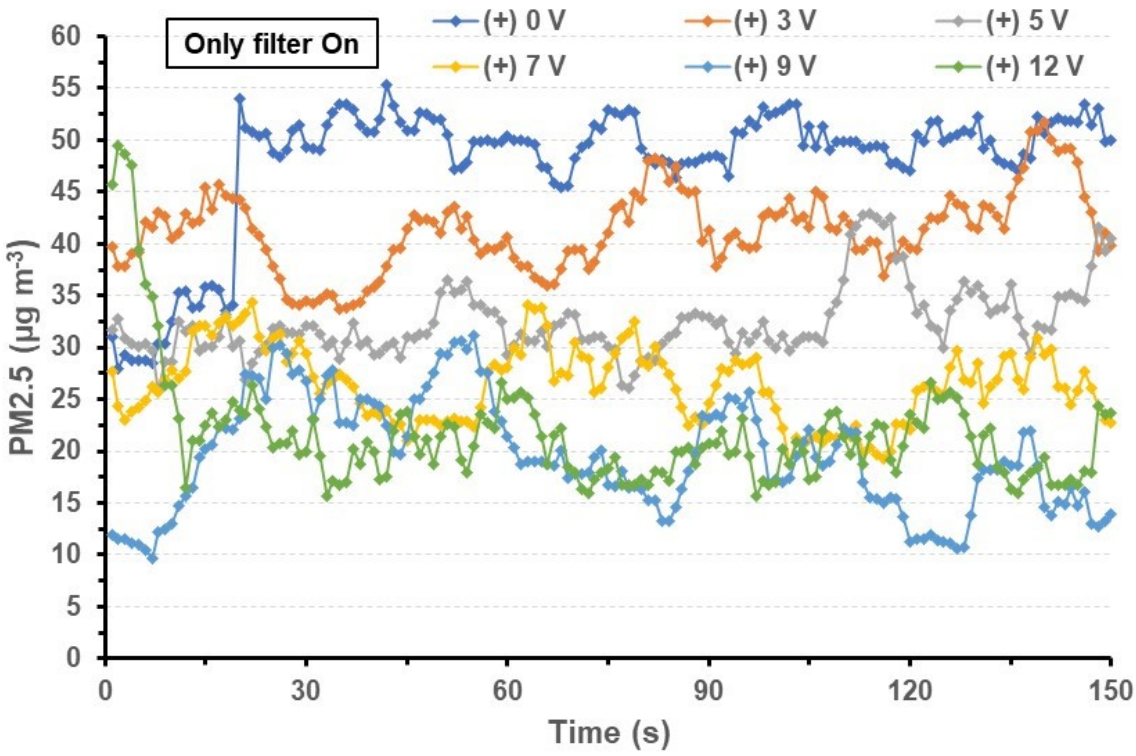

Figure S7. Transient evolution of PM2.5 density for various AGON filter voltage conditions.

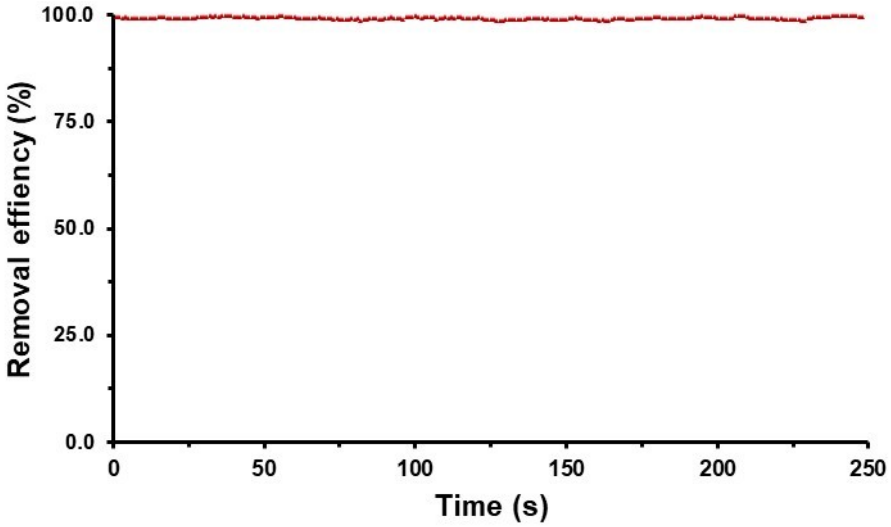

Figure. S8 Removal efficiency of the AGON filter for PM2.5.

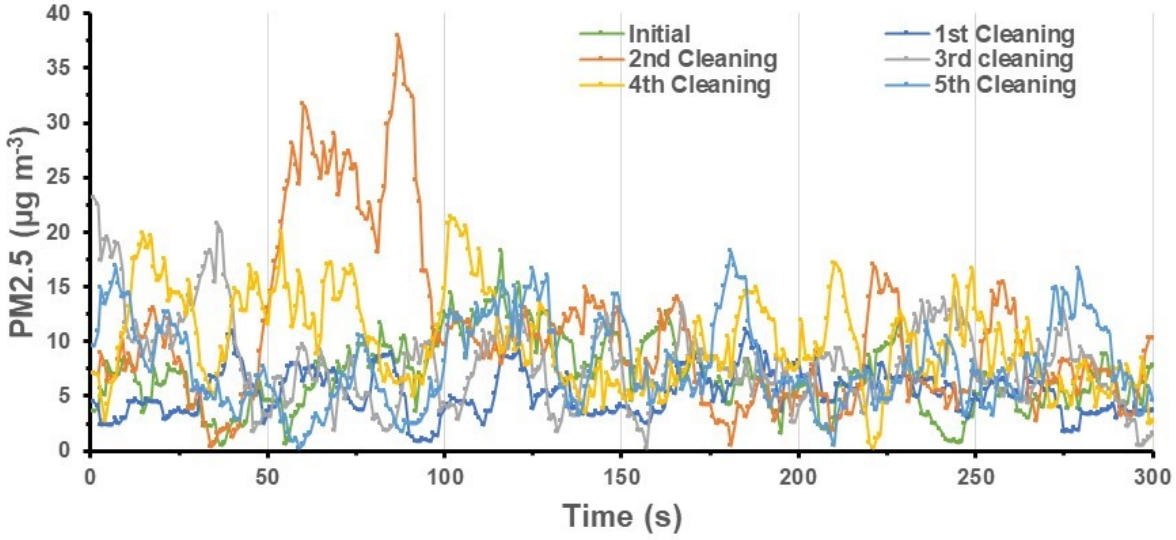

Figure S9. PM2.5 removal experiment results of the AGON filter for 5 repeated cycles of regeneration and reuse of the filter.

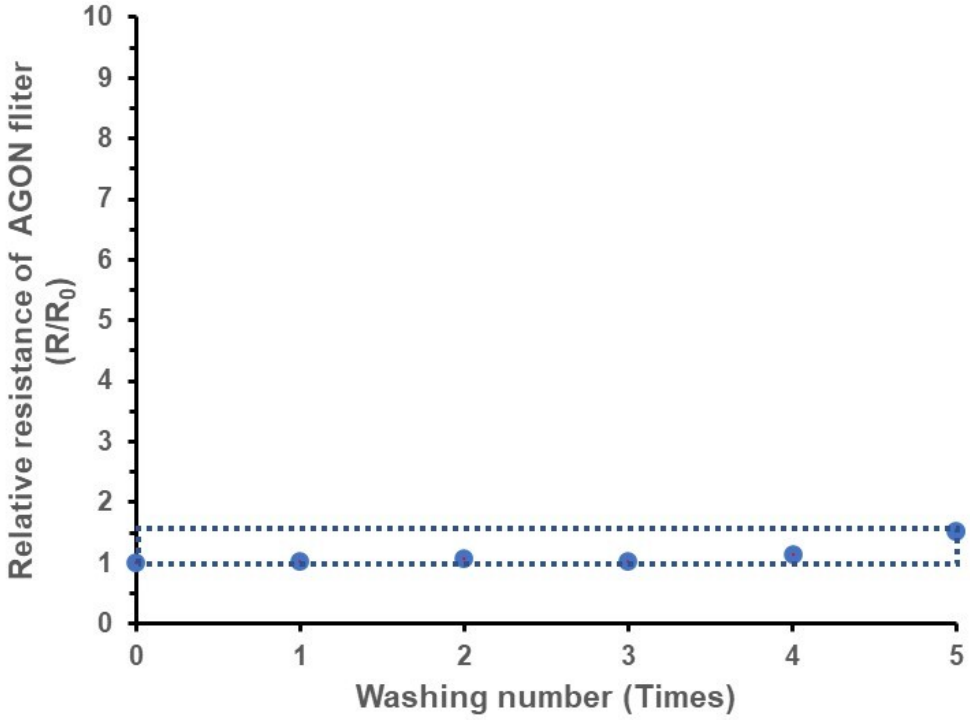

Figure S10. The normalized electrical resistance after the cleaning process.