Supporting Information

Silver Nanowire/MnO_2 Nanowire Hybrid Polymer Nanocomposites: Materials with High Dielectric Permittivity and Low Dielectric Loss

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Figure S1 shows the size distribution for synthesized nanowires. Since, AgNWs were synthesized based on a template method, they had a very narrow diameter size distribution around 15 nm. Thus, diameter size distribution for AgNW is not presented.

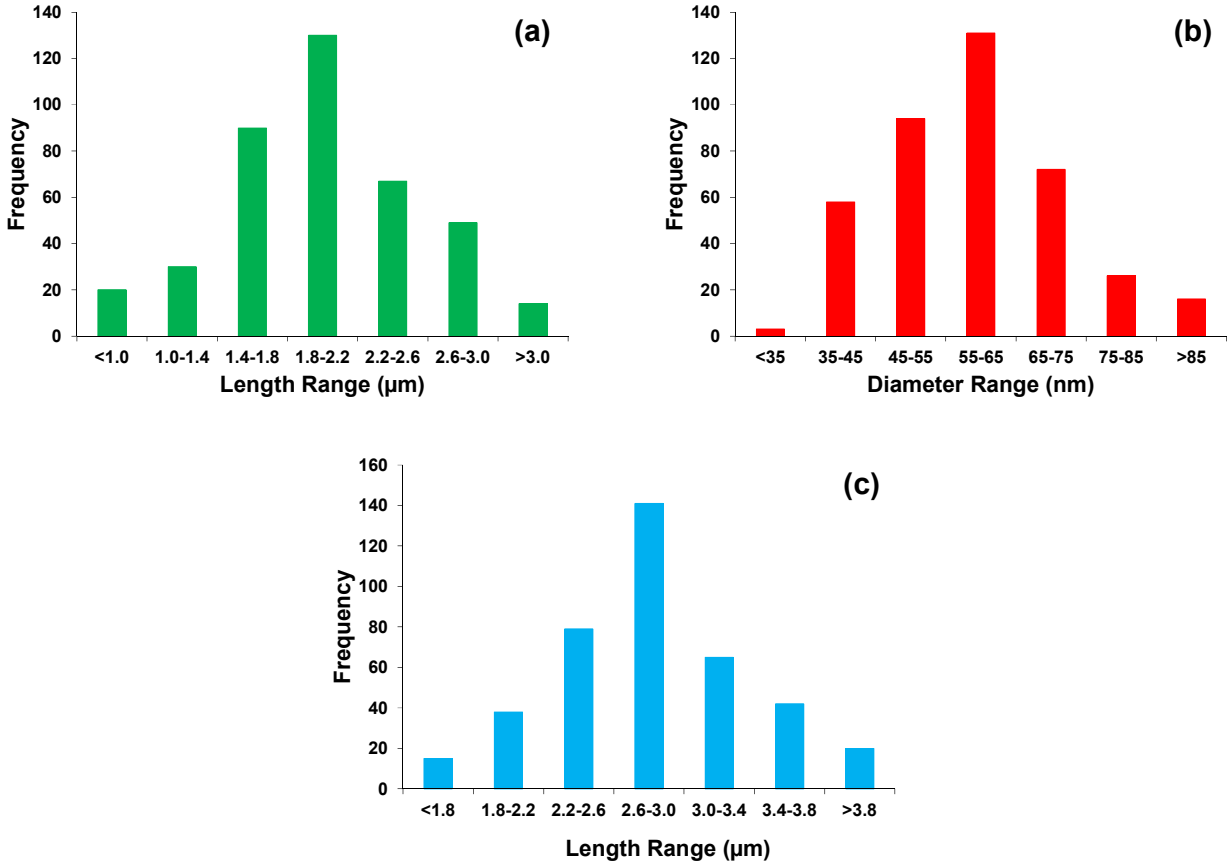

Figure S1. Size distribution for synthesized nanowire: (a) MnO_2NW- length distribution, (b) MnO_2NW- diameter distribution, and (c) AgNW- length distribution.

To have a better insight of nanocomposites microstructure, SEM was carried out on the fracture surface of the final nanocomposites. As shown in Figure S2 for 2.0vol% AgNW/1.0vol% MnO_2NW/PMMA hybrid nanocomposite, nanowires retained their shape in the final nanocomposite. Elemental mapping shows that the areas holding AgNW and MnO_2NW

overlapped each other, which is a further evidence of the role of MnO_2NW in formation of hybrid nanocapacitors and also cutting of AgNWs contact points. Furthermore, given the schematic and SEM image in Figure S2, it can be claimed that nanowires preferred to orient in planar surface.

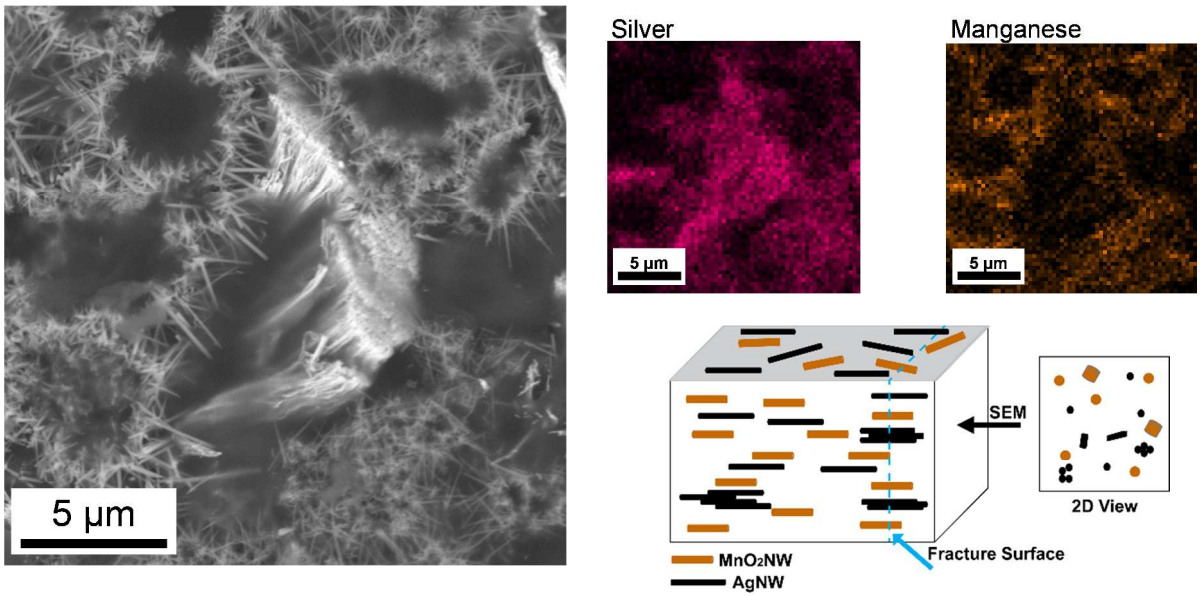

Figure S2: SEM image of the fracture surface of 2.0vol% AgNW/1.0vol% MnO_2NW/PMMA hybrid nanocomposite with elemental analysis map.