Electronic Supplementary Material (ESI) for Nanoscale.

Supporting Information

Printing nanoparticle-based isotropic/anisotropic networks for directional electrical circuits

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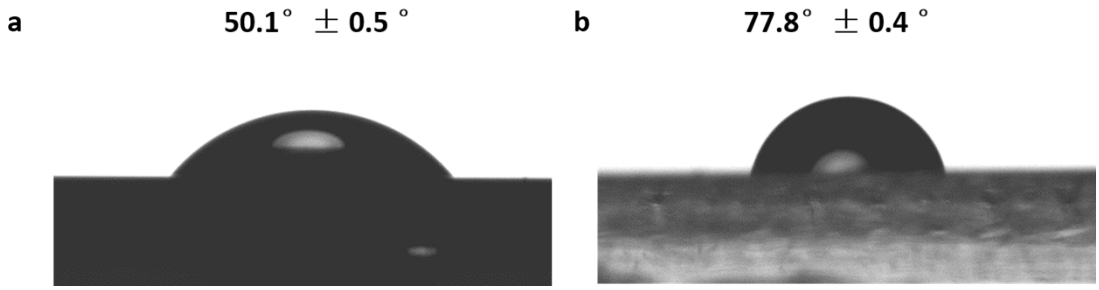

Fig. S1 Contact angles of water at the substrate (a) and the template (b).

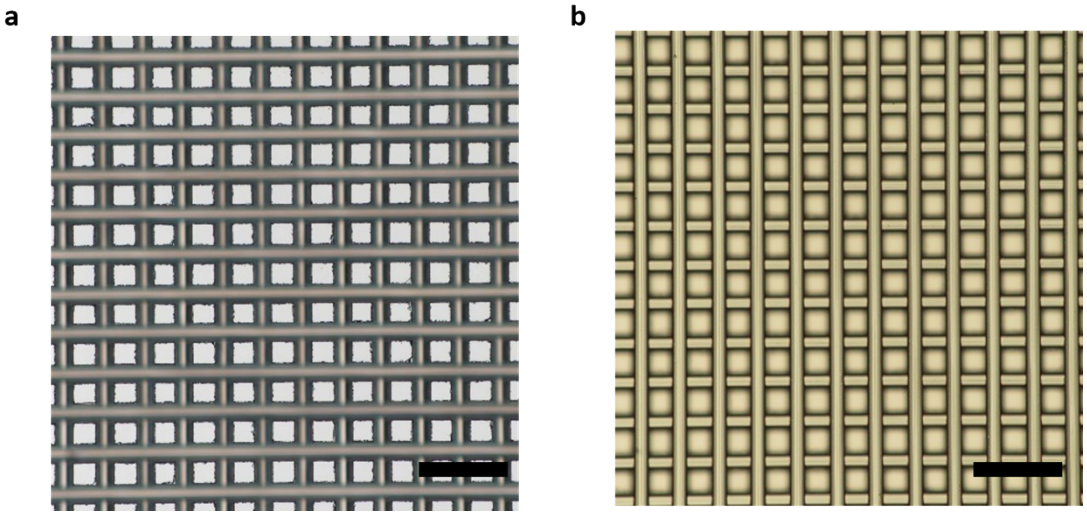

Fig. S2 Optical images of (a) groove-shaped silicon wafer and (b) grid-shaped template. Scale bar: 100 μm.

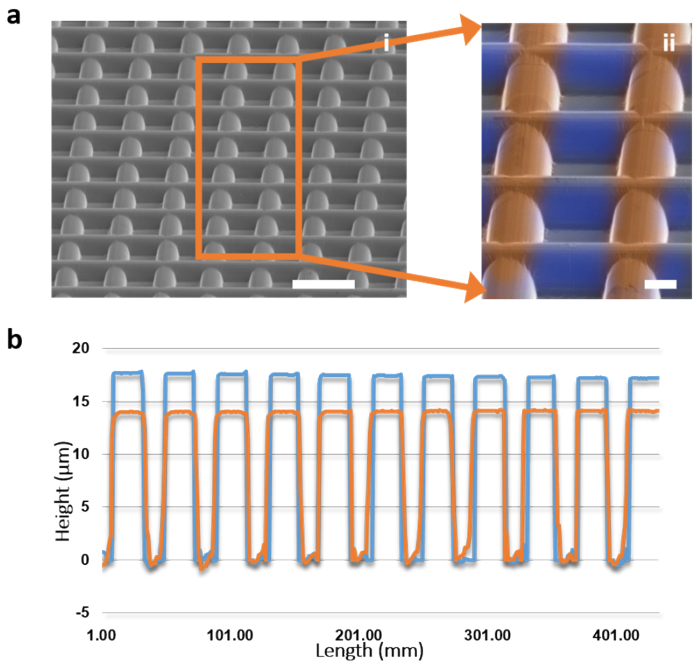

Fig. S3 Characterization of the grid-shaped template. (a) SEM images of the grid-shaped template and (ii) magnified SEM images of the template in (i). Scale bars: i: 50 µm, ii: 10 µm. (b) The statistical height chart of transverse and longitudinal walls.

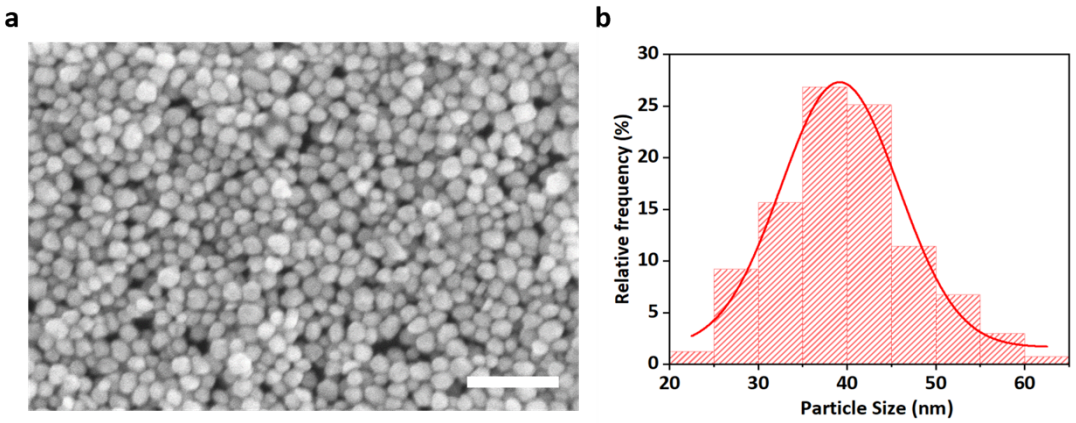

Fig. S4 Characterization of the Ag NPs. (a) SEM image, scale bar: 200 µm. (b) Particle size distribution of the synthesized Ag NPs used in this work.

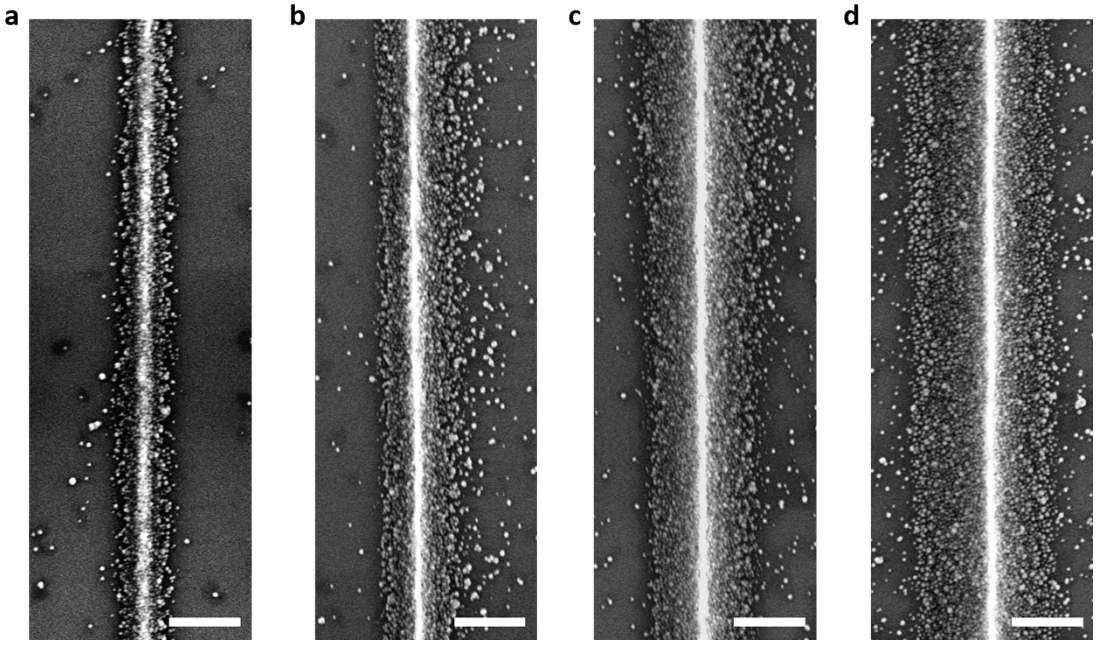

Fig. S5 The thickness of the printed micro/nano lines can be controlled by the concentration of Ag NPs. In this work, the width of printed lines can be manipulated from 650 nm to 2 μm under the concentration of 5–60 mg mL^{-1}. Scale bar: 1 μm.

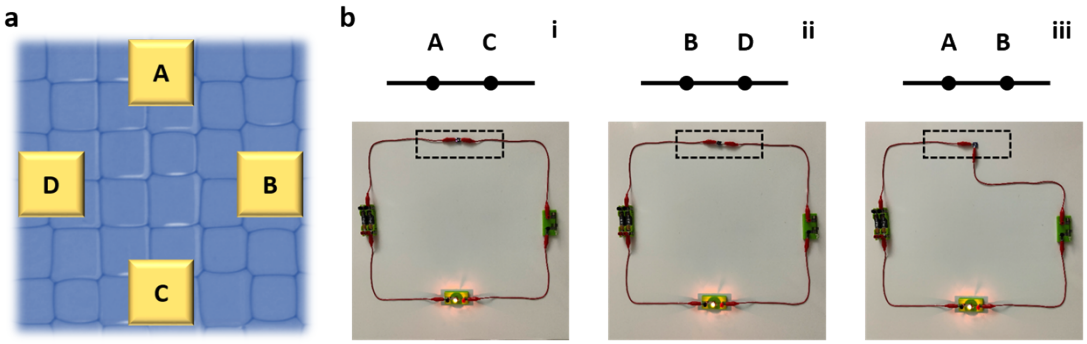

Fig. S6 (a) Tested CC and the four evaporated electrodes A-D. (b) Application of networks in LED circuits. The circuits exhibit conducting states when they are accessed to different electrodes of CC.

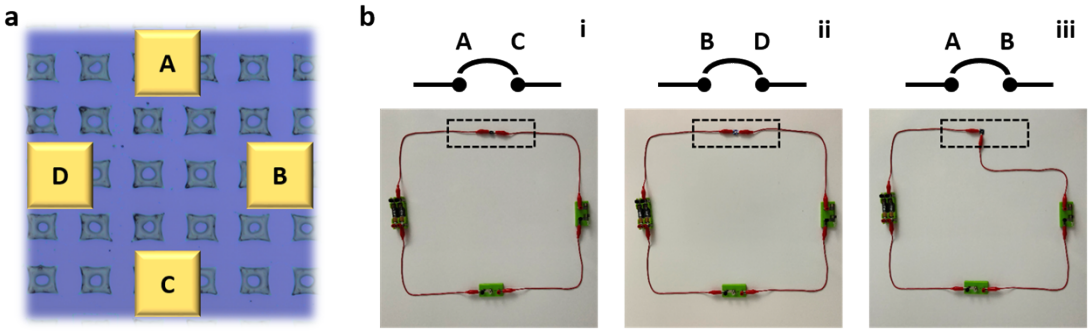

Fig. S7 (a) Tested DC and the four evaporated electrodes A-D. (b) Application of networks in LED circuits. The circuits exhibit non-conducting states when they are accessed to different electrodes of DC.