Electronic Supplementary Material (ESI) for Nanoscale.

Silver Nanowire Inks for Direct-Write Electronic Tattoo Applications

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Keywords: silver nanowires, aerosol jet printing, printed electronics, electronic tattoos

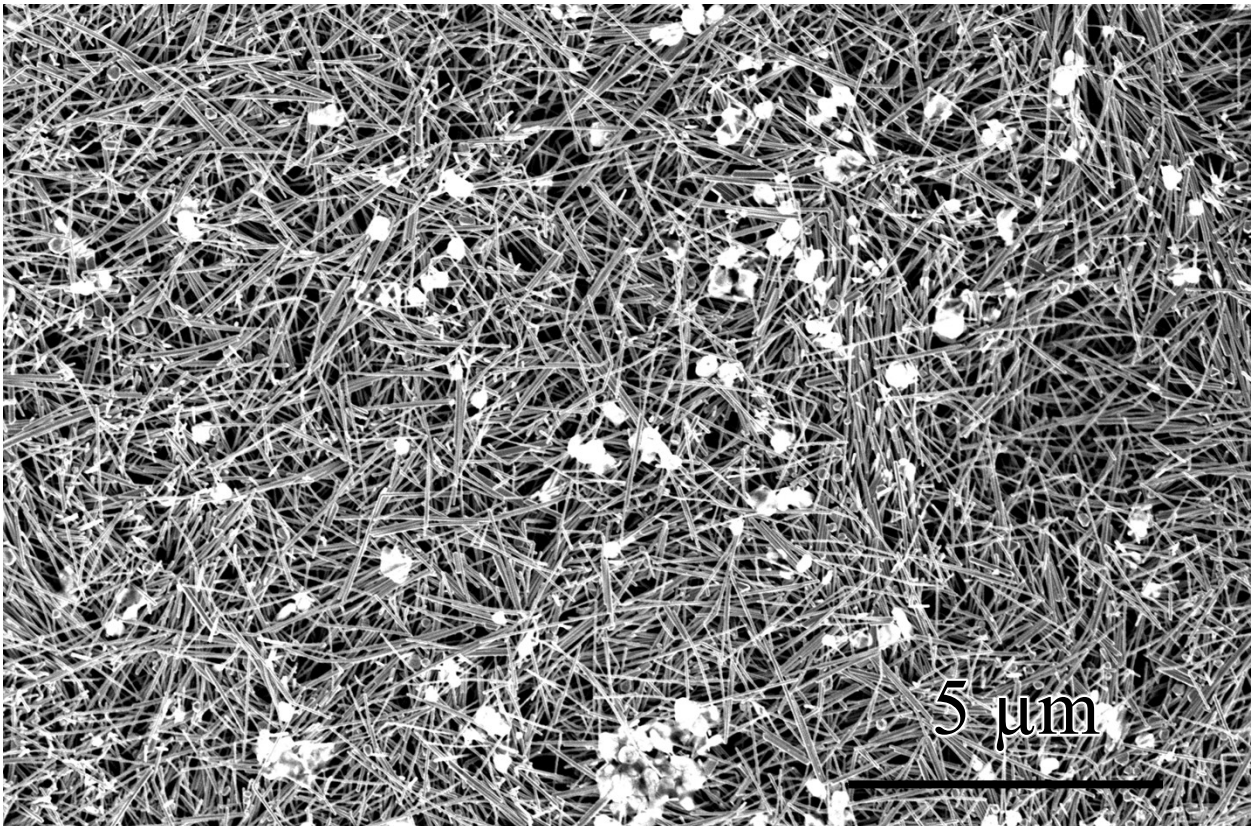


Figure S1. SEM image of a film printed with a nanowire ink fabricated with 20% EG. The white spots are regions of high EG concentration.

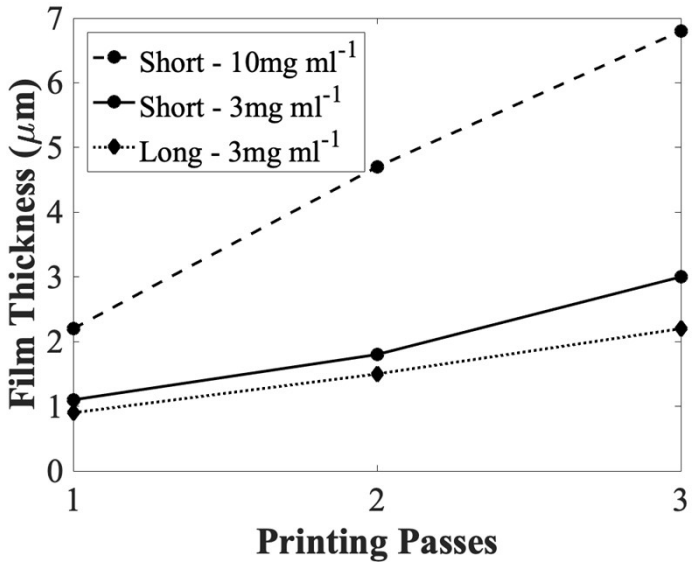


Figure S2. Film Thickness. Film thickness for short nanowires at their settling concentration (10 mg ml^{-1}) and 3 mg ml^{-1} as well as thickness for long nanowires at their settling concentration (3 mg ml^{-1})

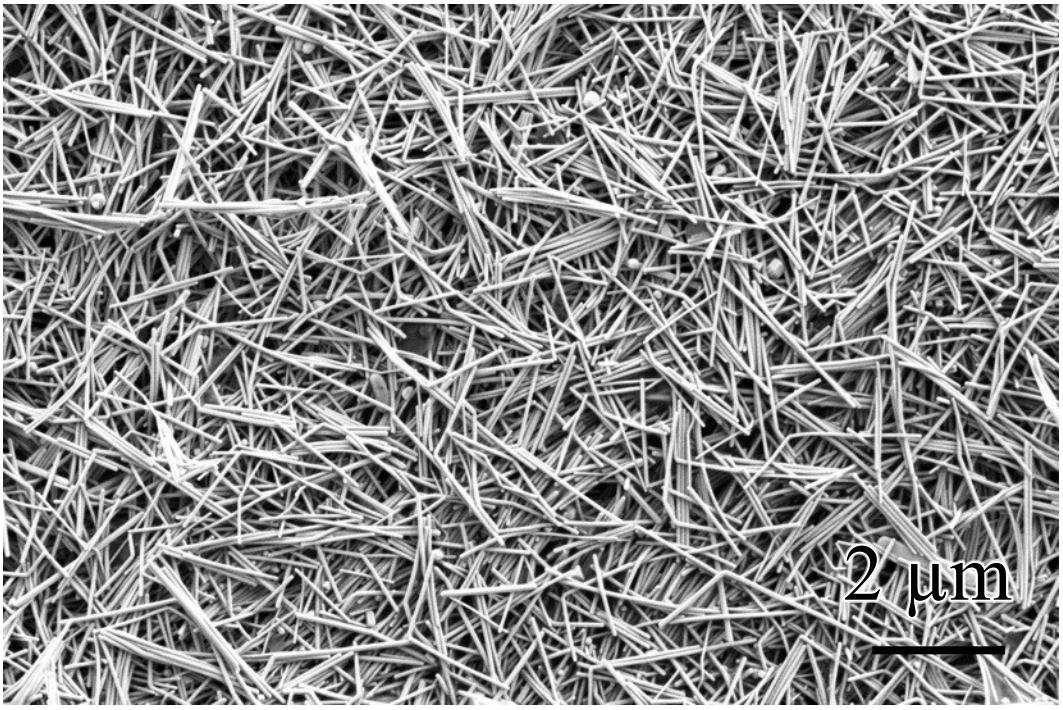
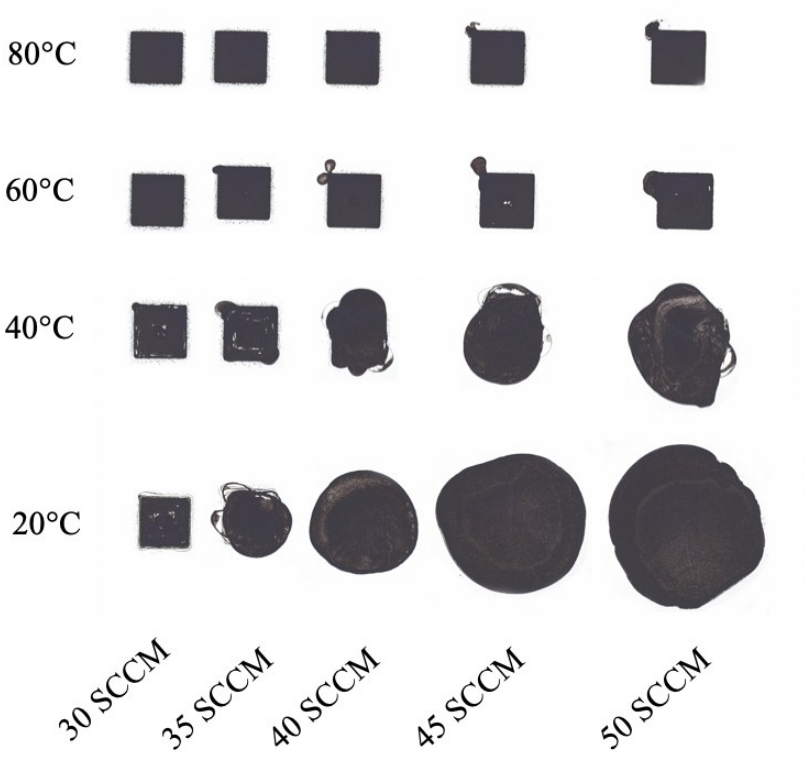


Figure S3. Scanning electron microscope (SEM) image of printed short silver nanowire films.

a



b

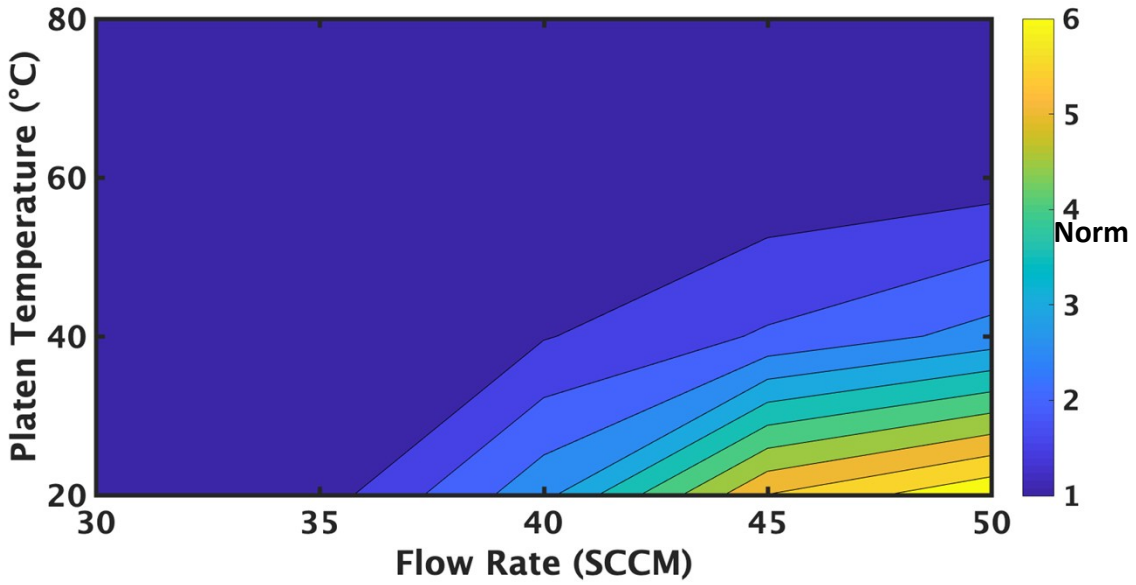


Figure S4. Temperature and flow rate dependence on print quality. a) Images of silver nanowire squares printed at varying atomizer flow rates and varying platen temperatures. b) plot of the normalized size as a function of platen temperature and atomizer flow rate.

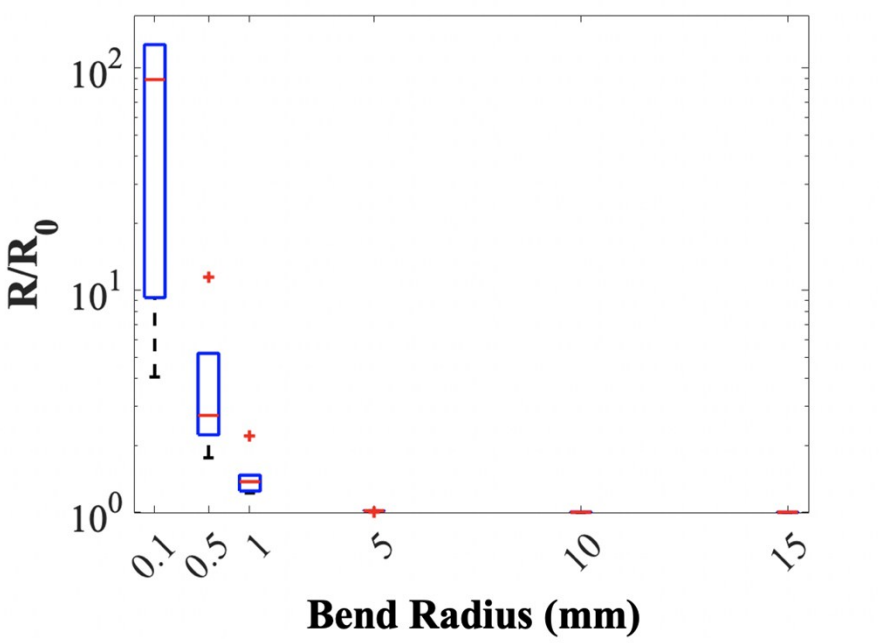


Figure S5. Resistance with bend radius for silver nanoparticle films printed on 0.1 mm thick Kapton. Printed at 60°C and cured at 200°C for 1 hour.

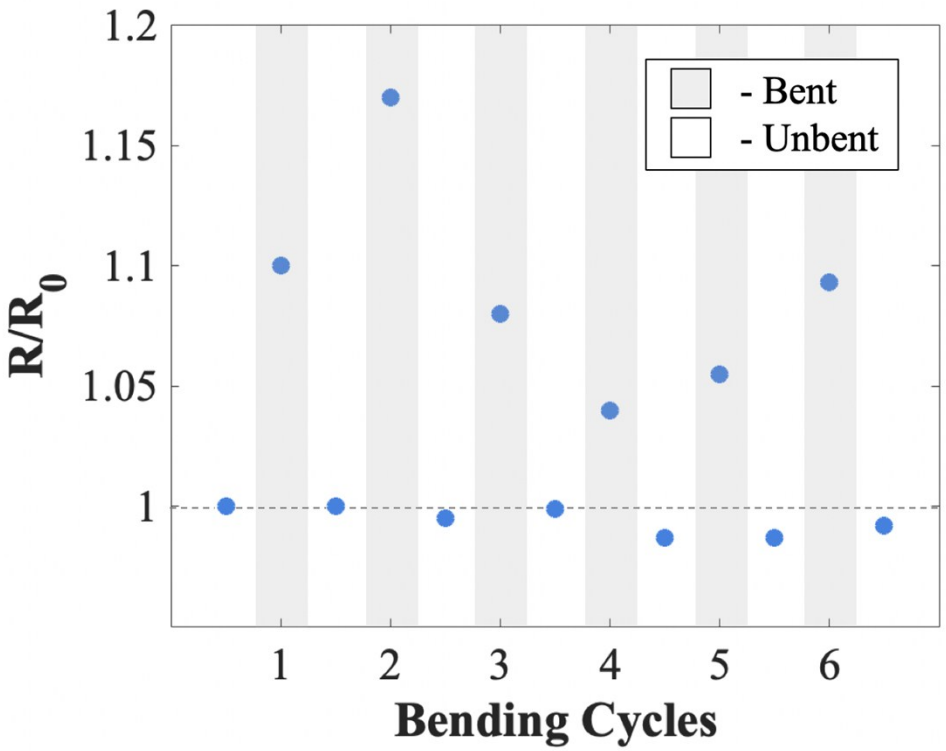


Figure S6. Reversable resistance increase with silver nanowire bending. Resistance a silver nanowire trace during 6 consecutive bending cycles at 0.1 mm bend radius in both the bent (grey boxes) and the unbent (white boxes) state.

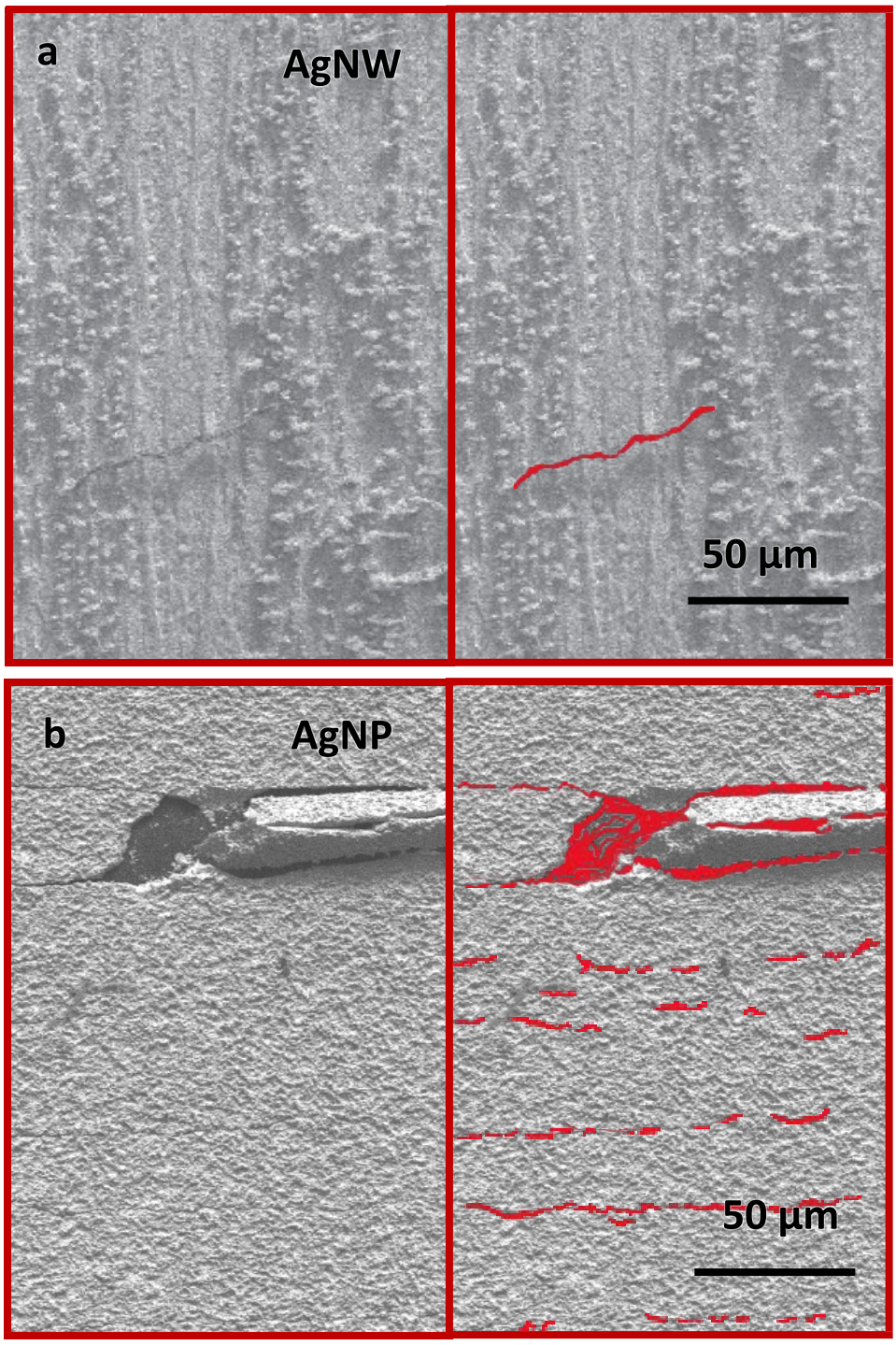


Figure S7. SEM images of printed nanostructure films. a) SEM images of silver nanoparticle (left) and silver nanowire (right) traces after 100 bending cycles (silver nanoparticle) and 1000 bending cycles (silver nanowire). b) SEM with cracks highlighted with r ed lines

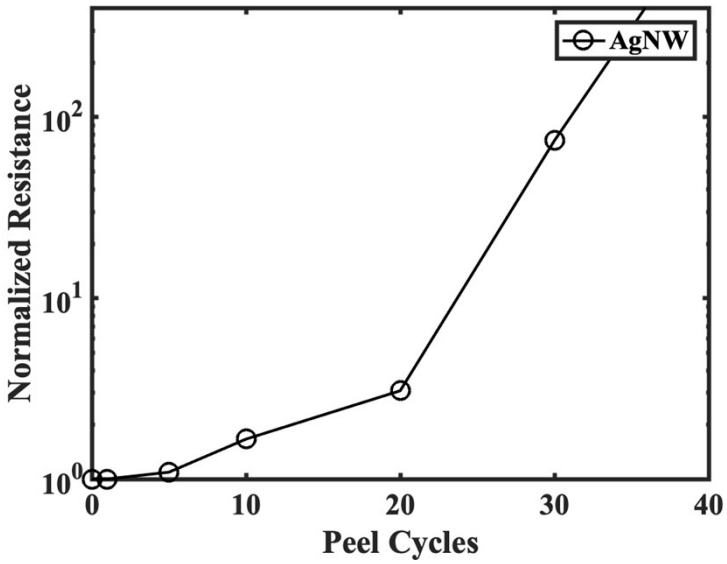


Figure S8. Multiple peel test. Resistance increase with multiple scotch tape peel tests with a nanowire film.