Supporting information

High initial conductivity and oxidation resistance of copper nanowires films via depositing of oxalic acid

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Supporting Figures

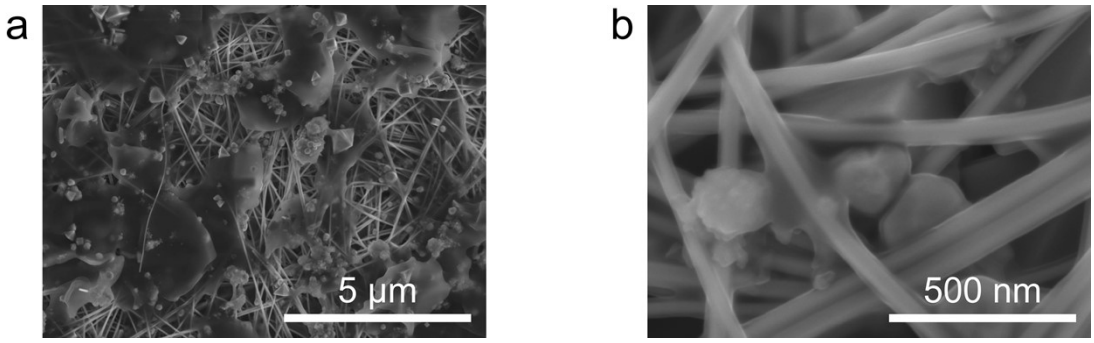

Figure S1 (a,b) SEM images of large-sized aggregated copper impurities.

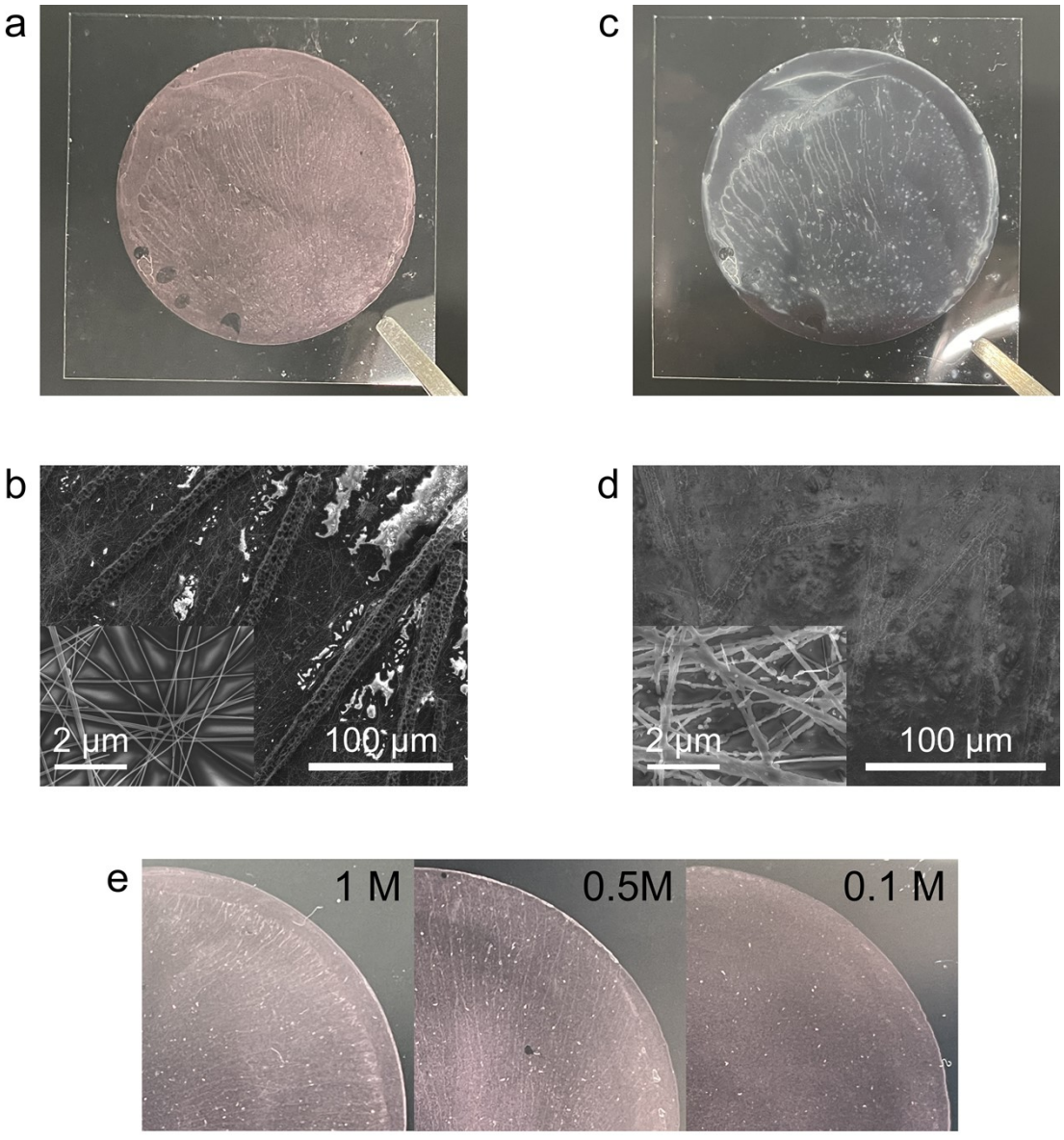
a
c
b
d
2 μm
100 μm
2 μm
100 μm
e
1 M
0.5M
0.1 M
f
Transmittance (%)
90
85
80
75
0
10
20
30
40
50
60
70
Time (day)
0.01 M OA
0.1 M OA
0.5 M OA
1 M OA
g
Sheet Resistance (Ω/sq)
10^4
10^3
10^2
10^1
0
10
20
30
40
50
60
70
Time (day)
0.01 M OA
0.1 M OA
0.5 M OA
1 M OA

Figure S2 (a) Digital photograph and (b) SEM images of the OA-Cu NWs FTCF treated with 1 M OA solution. (c) Digital photograph and (d) SEM images of the OA-Cu NWs FTCF, treated with 1 M OA solution and exposed after five days at room temperature. (e) Digital photographs of the OA-Cu NWs FTCFs treated with 1 M, 0.5 M, and 0.1 M OA solutions, respectively. (f) Transmittance (λ=550 nm) and (g) Sheet resistance of the OA-Cu NWs FTCFs respectively treated with 1 M, 0.5 M, 0.1 M and 0.01 M OA solutions at room temperature.

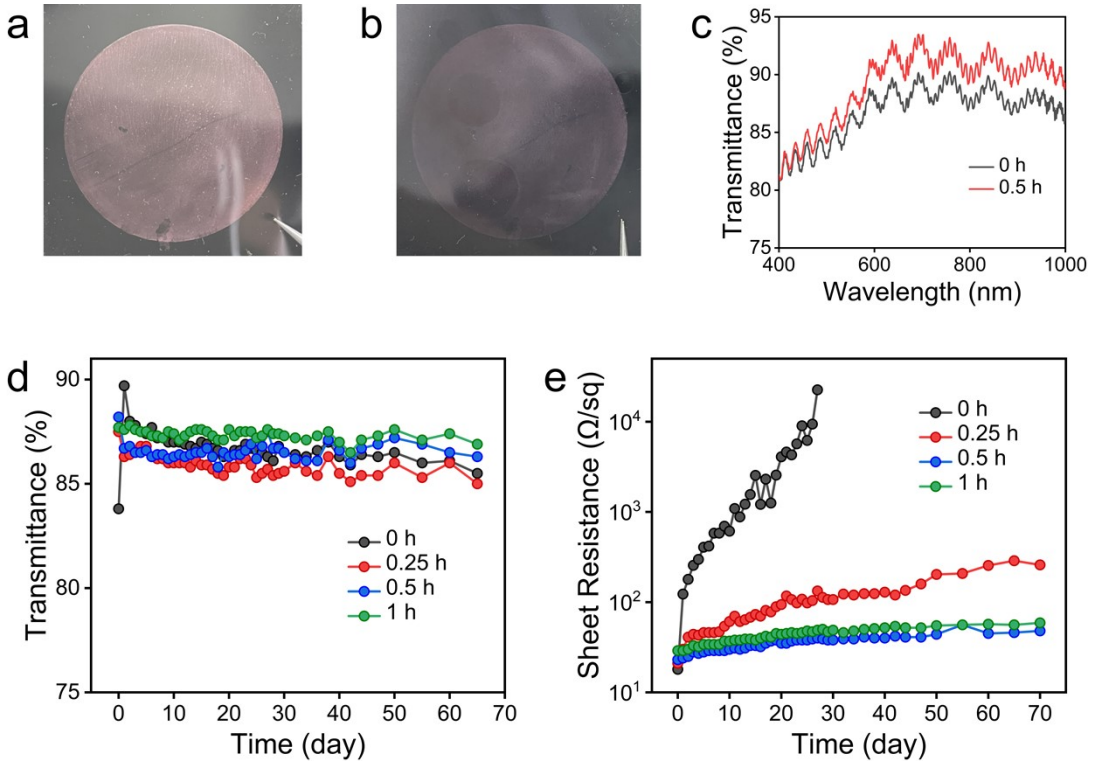

Figure S3 (a, b) Digital photographs of the OA-Cu NWs FTCF treated with 1 M OA solution before and after heating. (c) Transmittance (λ=550 nm) of the OA-Cu NWs FTCF treated with 1 M OA solution before and after heating. (d) Transmittance (λ=550 nm) and (e) Sheet resistance of the OA-Cu NWs FTCFs treated with 1 M OA solution after different heating durations at room temperature.

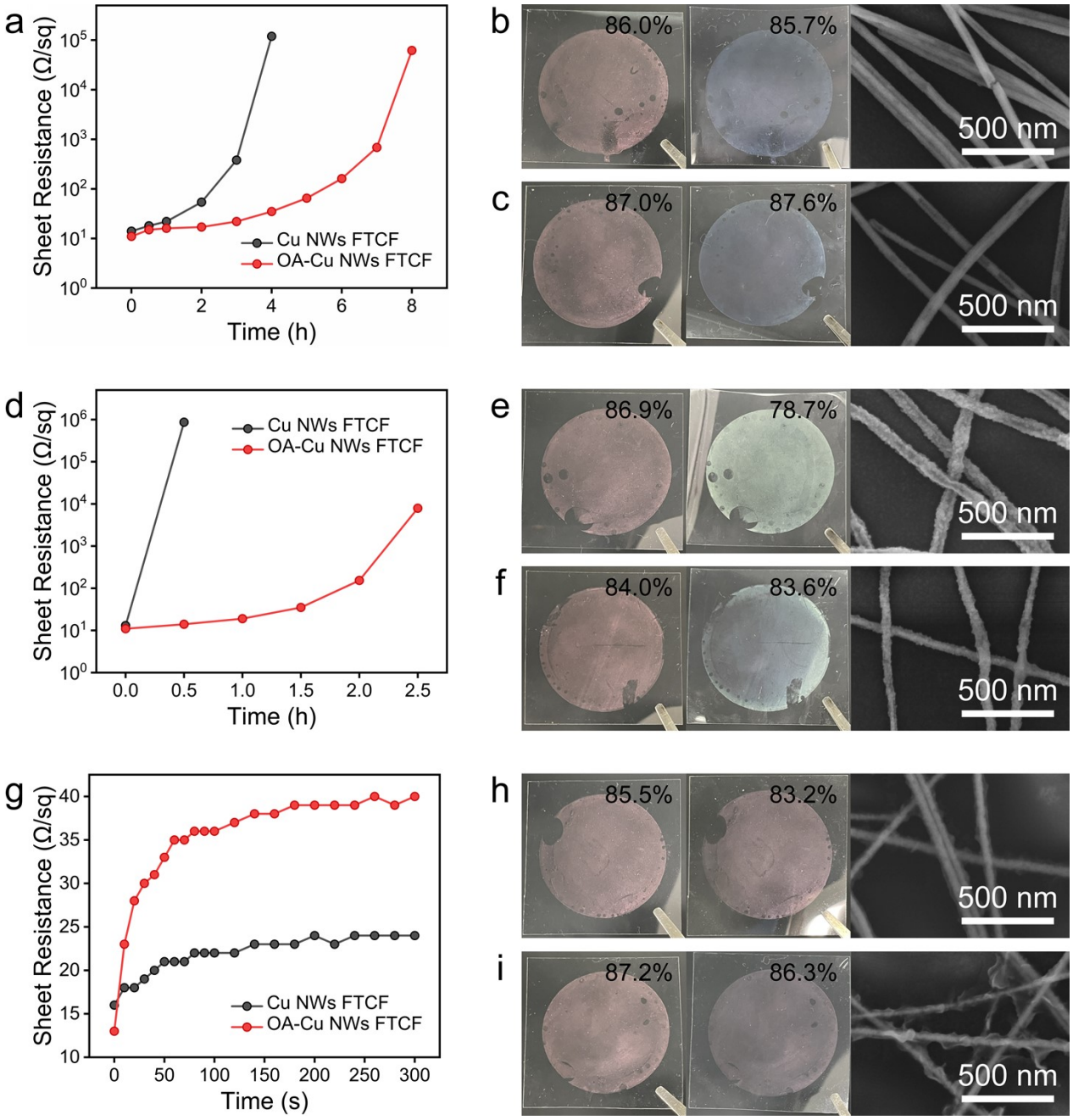

Figure S4 (a) Sheet resistance change of the Cu NWs FTCF and OA-Cu NWs FTCF at 80 ℃, 80% RH. (b) Digital photographs and transmittance of the Cu NWs FTCF before and after 80 ℃, 80% RH stability testing, along with the SEM image after testing. (c) Digital photographs and transmittance of the OA-Cu NWs FTCF before and after 80 ℃, 80% RH stability testing, along with the SEM image after testing. (d) Sheet resistance change of the Cu NWs FTCF and OA-Cu NWs FTCF at 150 ℃. (e) Digital photographs and transmittance of the Cu NWs FTCF before and after 150 ℃ stability testing, along with the SEM image after testing. (f) Digital photographs and

transmittance of the OA-Cu NWs FTCF before and after 150 ℃ stability testing, along with the SEM image after testing. (g) Sheet resistance change of the Cu NWs FTCF and OA-Cu NWs FTCF treated with 3 wt% H_2O_2 solution. (h) Digital photographs and transmittance of the Cu NWs FTCF before and after H_2O_2 stability testing, along with the SEM image after testing. (i) Digital photographs and transmittance of the OA-Cu NWs FTCF before and after H_2O_2 stability testing, along with the SEM image after testing.

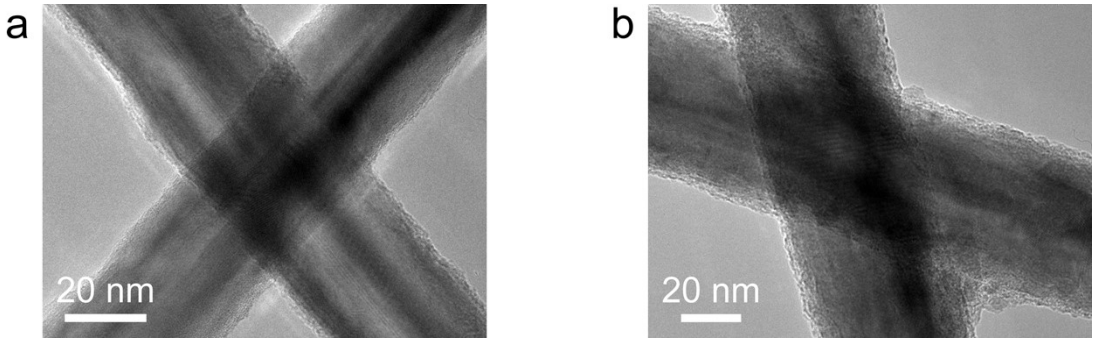

Figure S5 (a) HR-TEM image of Cu NWs junctions before OA treatment. (b) HR-TEM image of Cu NWs junctions after OA treatment.