Electronic Supplementary Information

Formulation of concentrated and stable ink of silver nanowires with applications in transparent conductive films

Chao Chen,[ab] Yonggao Jia,[ab] Dan Jia,[ab] Shuxin Li,[a] Shulin Ji*[a] and Changhui Ye*[a]

[a.]Key Laboratory of Materials Physics and Anhui Key Laboratory of Nanomaterials and Technology, Institute of Solid State Physics, Chinese Academy of Sciences, Hefei 230031, China.

[b.]University of Science and Technology of China, Hefei 230026, China.

*Corresponding authors. E-mails: slji@issp.ac.cn, chye@issp.ac.cn

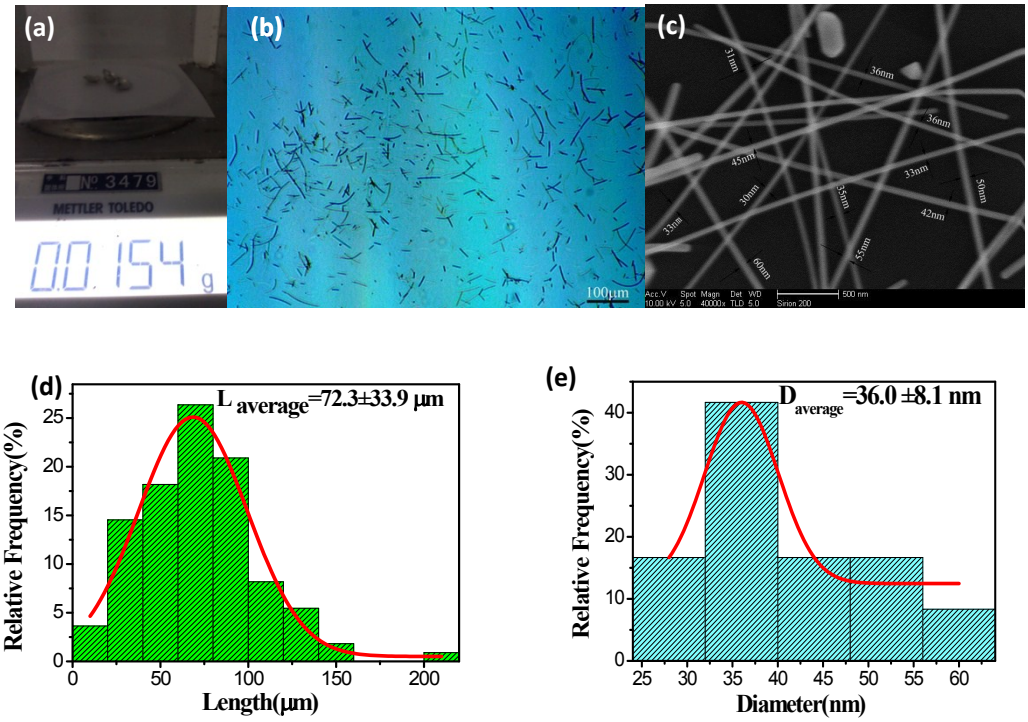

Fig. S1 (a) Yield, (b) optical image, (c) FE-SEM image, (d) length, and (e) diameter distributions of AgNWs.

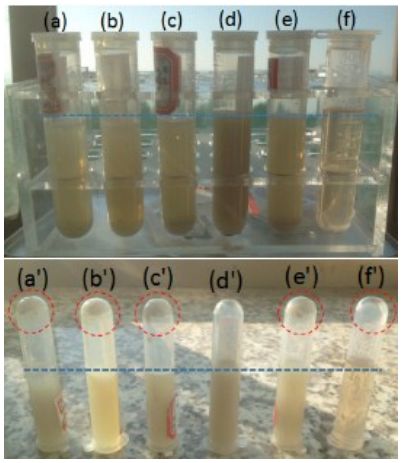

Fig. S2 Photograph of AgNW inks left still at room temperature for the same period (14 days) where V_{NMP}/V_{EG} was (a, a') 1:8, (b, b') 2:7, (c, c') 3:6, (d, d') 4:5, (e, e') 5:4 and (f, f') 7:2, while C_{PVP}, C_{AgNW}, and $C_{glycerol}$ were kept as 7.5 mg/mL, 0.3 mg/mL, and 10 vol%, respectively.

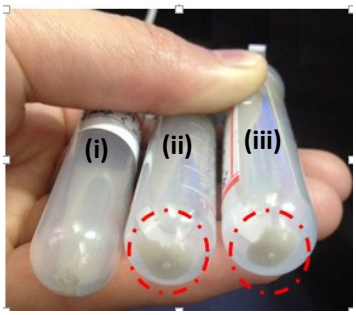

Fig. S3 Photograph of AgNW inks left still at room temperature for the same period (14 days) where C_{AgNW} was (i) 0.6, (ii) 1.2, and (iii) 2.4 mg/mL, while $V_{NMP}/V_{EG}/V_{glycerol}$ and C_{PVP} were kept as 4:5:1 and 7.5 mg/mL, respectively.

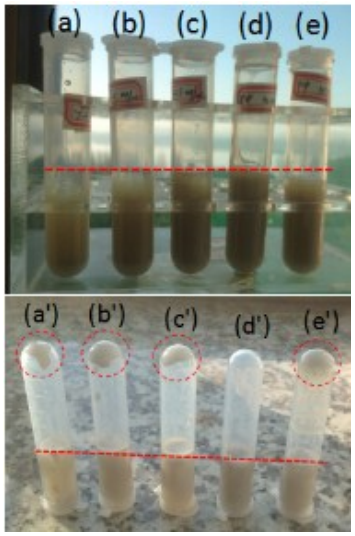

Fig. S4 Photograph of AgNW inks left still at room temperature for the same period (14 days) where C_{PVP} was (a, a') 7.5, (b, b') 15, (c, c') 22.5, (d, d') 30, (e, e') 37.5 mg/mL, while $C_{AgNW,}$ and $V_{NMP}/V_{EG}/V_{glycerol}$ were kept as 1.2 mg/mL and 4:5:1, respectively.

Fig. S5 Photograph of AgNW inks left still at room temperature for 6 months where C_{AgNW}, C_{PVP} and $V_{NMP}/V_{EG}/V_{glycerol}$ were kept as 5 mg/mL, 30 mg/mL and 4:5:1.

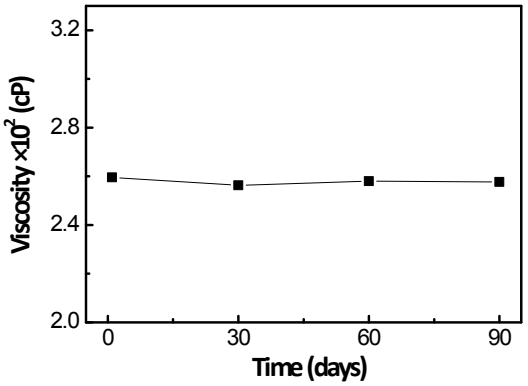

Fig. S6 Viscosity change of 5 mg/mL AgNW ink with time.

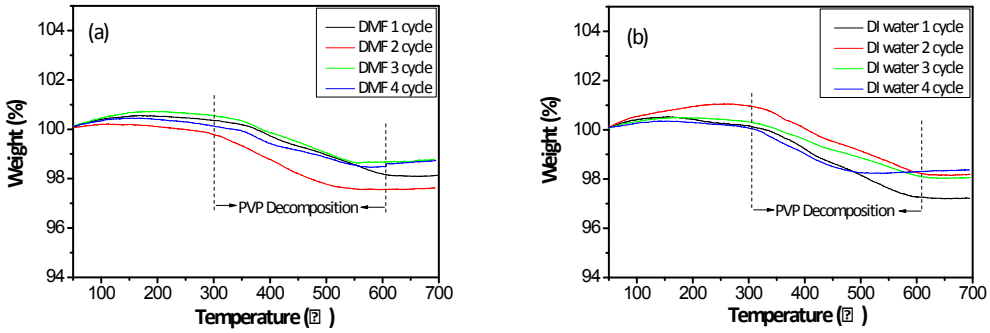

Fig. S7 TGA curves of AgNWs cleaned for different cycles by (a) DMF and (b) DI water.

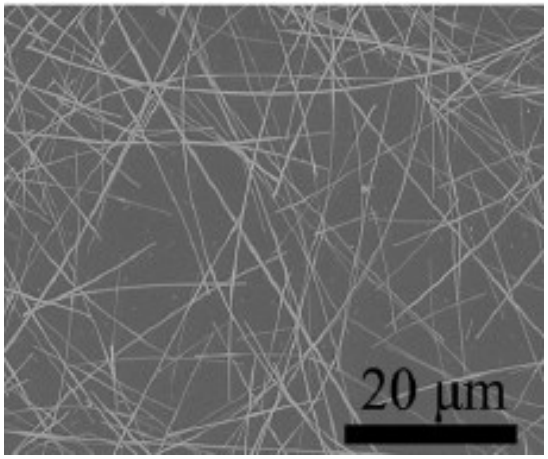

Fig. S8 SEM image of the film composed of AgNWs cleaned by DMF for 2 cycles and re-dispersed in ethanol.

Table S1 Comparison of residual PVP content from TGA curves under different purification cycles with DMF and DI water.

Purification method	Initial weight (mg)	Weight loss of PVP (mg)	Relative weight of PVP
1 cycle with DI water	0.7951	0.0220	0.0277
1 cycle with DMF	0.9843	0.0268	0.0272
2 cycle with DI water	0.8482	0.0230	0.0271
2 cycle with DMF	1.0162	0.0183	0.0180
3 cycle with DI water	1.2048	0.0260	0.0216
3 cycle with DMF	1.2068	0.0200	0.0166
4 cycle with DI water	1.1242	0.0220	0.0196
4 cycle with DMF	0.8747	0.0130	0.0149