Supporting Information

Electrophoretic Deposition of Aged and Charge Controlled Colloidal Copper Sulfide Nanoparticles

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Figure S1. SEM images of the films deposited on the positively charged substrates using

 $\mathrm{Cu}_{2\text{-}x}S$ NPs that were subjected to various aging times NPs.



Figure S2. SEM images of the films deposited on negatively charged substrates using Cu_{2-x}S

NPs that were subjected to various aging times



Figure S3. Cross-sectional SEM images of the films deposited on positively charged substrates using Cu_{2-x}S NPs that were subjected to various aging times.



Figure S4. (a) O 1s XPS spectra of non-aged and aged NPs. The peak deconvolution of the O (1 s) XPS core level of (b) non-aged and (c) aged NPs.



Figure S5. The XRD pattern of the 720-h aged NPs. The orange bars below the XRD pattern correspond to the reference of roxbyite phase (JCPDS #23-0958).



Figure S6. FT-IR spectra of non-aged (green curve) and aged NPs (orange curve).

Atomic %	Non-aged NP	Aged NP
C 1s	46.72	47.03
Cu 2p3	29.92	27.08
S 2p	16.95	15.9
N 1s	2.14	2.12
O 1s	4.27	7.87

 Table S1. Elemental composition (at. %) based on the XPS analysis of the non-aged and aged

Cu_{2-x}S NPs.