Electronic supplementary information (ESI)

Tunable Near-Infrared Localized Surface Plasmon Resonances of Djurleite Nanocrystals: Effects of Size, Shape, Surface-ligands and Oxygen Exposure Time

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Figure. S1

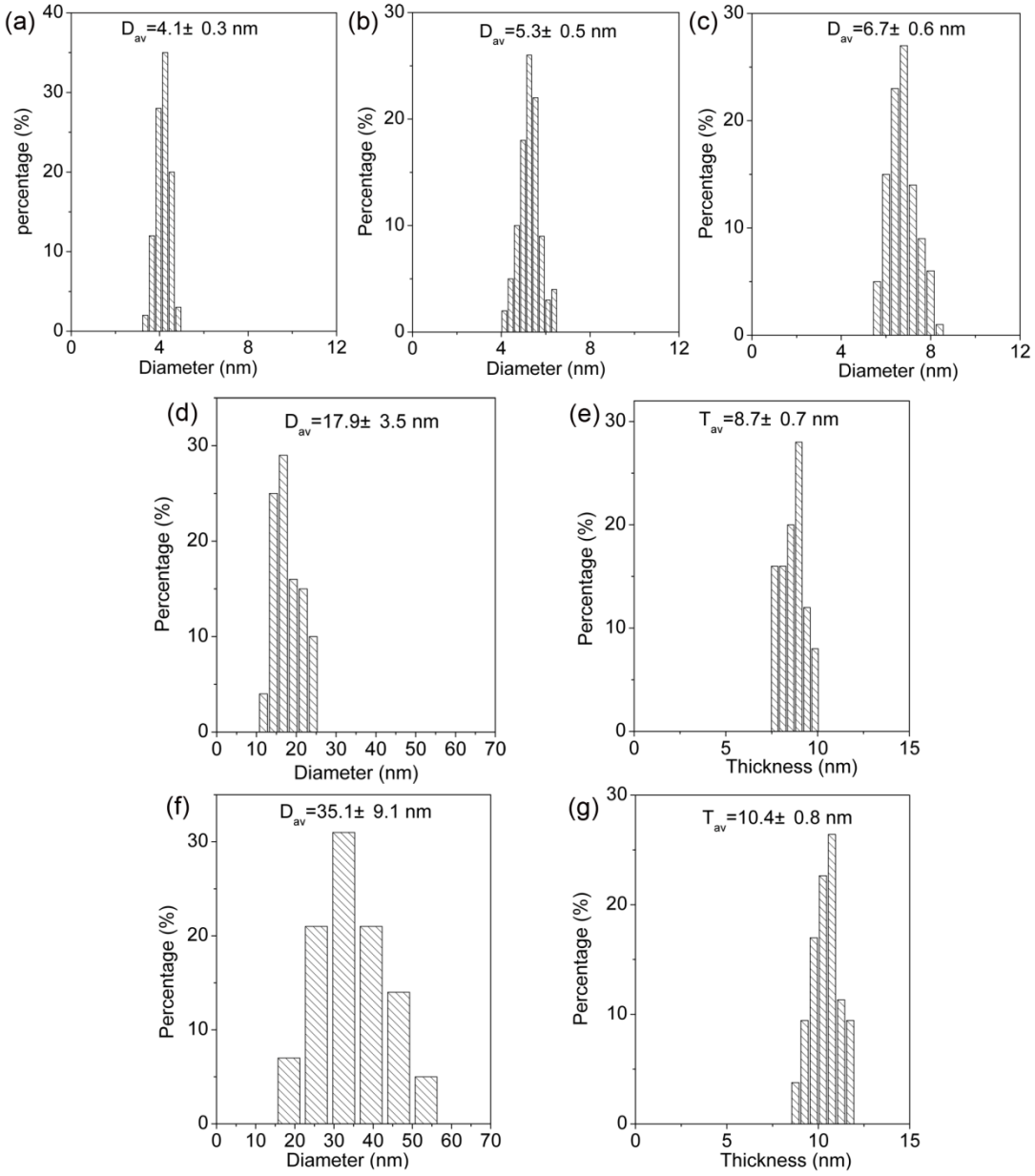

Fig. S1 Size distribution histograms of Sample A with different size and shape: (a) 4.1±0.3, nanospheres; (b) 5.3±0.5, nanospheres; (c) 6.7±0.6, nanospheres; (d) 17.9±3.5, diameter of nanodisks; (e) 8.7±0.7, thickness of nanodisks; (f) 35.1±9.1, diameter of nanodisks; (g) 10.4±0.8, thickness of nanodisks.

Figure. S2

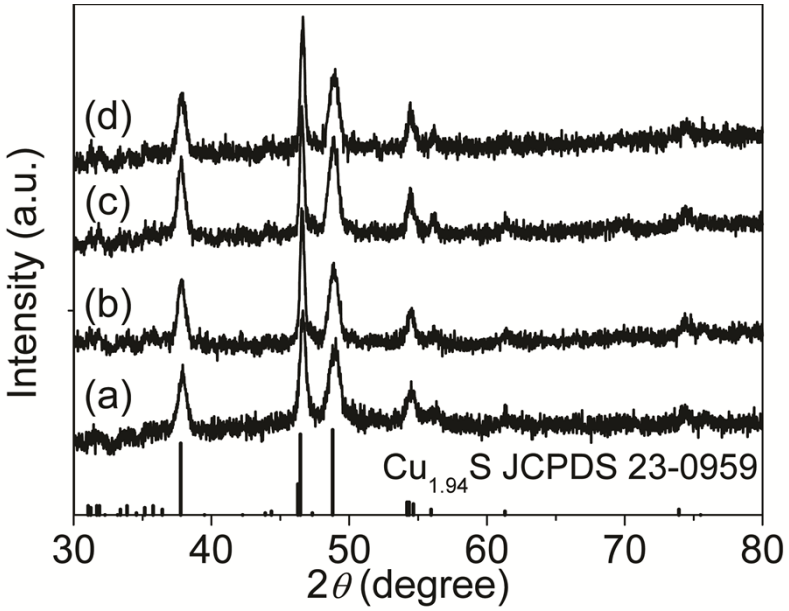

Fig.S2 XRD patterns of Sample A with different size and shape: (a) 4.1±0.3 nm, nanospheres; (b) 5.3±0.5 nm, nanospheres; (c) 6.7±0.6 nm, nanospheres; (d) 17.9±3.5 nm, nanodisks. The bottom lines represent the standard diffraction peaks of the djurleite nanocrystals.

Figure. S3

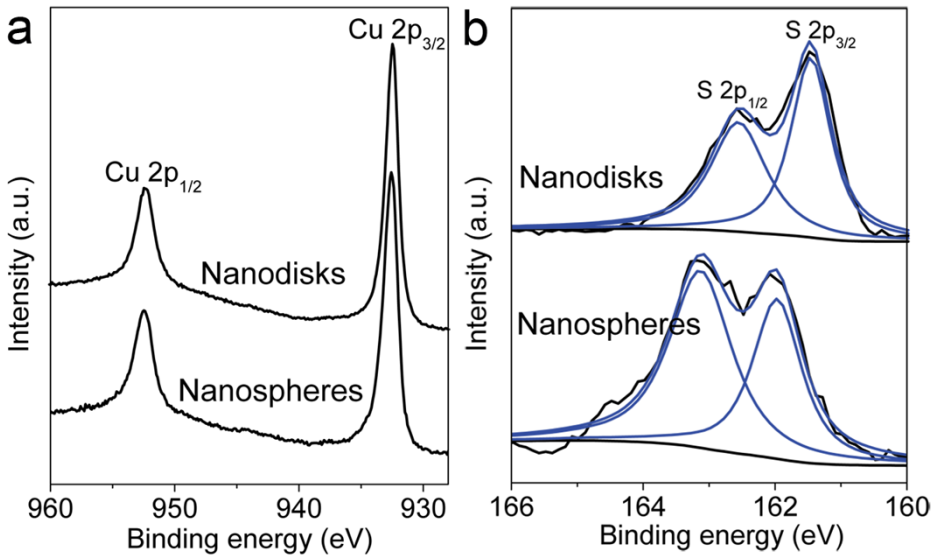

Fig.S3 XPS spectra of the nanospheres with a mean diameter of 6.7±0.6 nm and the nanodisks with a mean diameter 17.9±3.5 nm: (a) Cu 2p; (b) S 2p.

Figure. S4

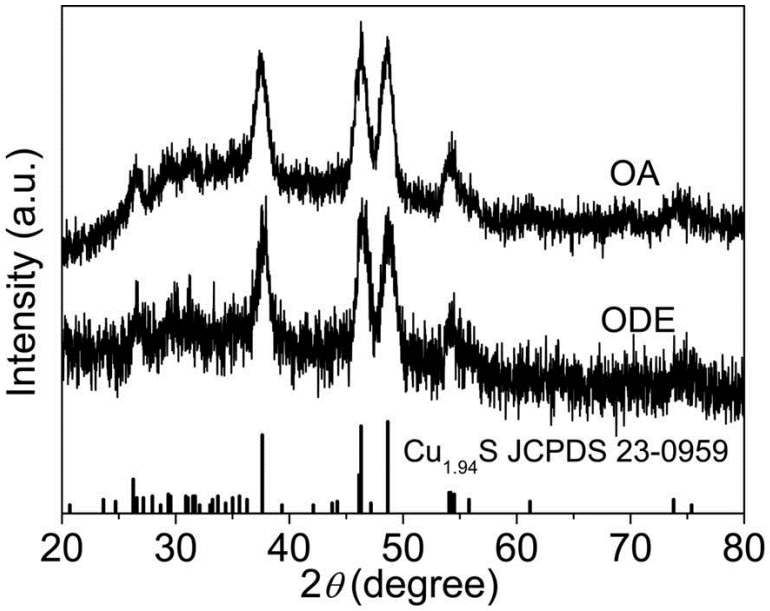

Fig. S4 XRD patterns of Sample B and Sample C, which are synthesized by using OA and ODE as co-solvents, and the bottom lines represent the standard diffraction peaks of bulk $Cu_{1.94}S$ (JCPDS card no 23-0959).

Figure. S5

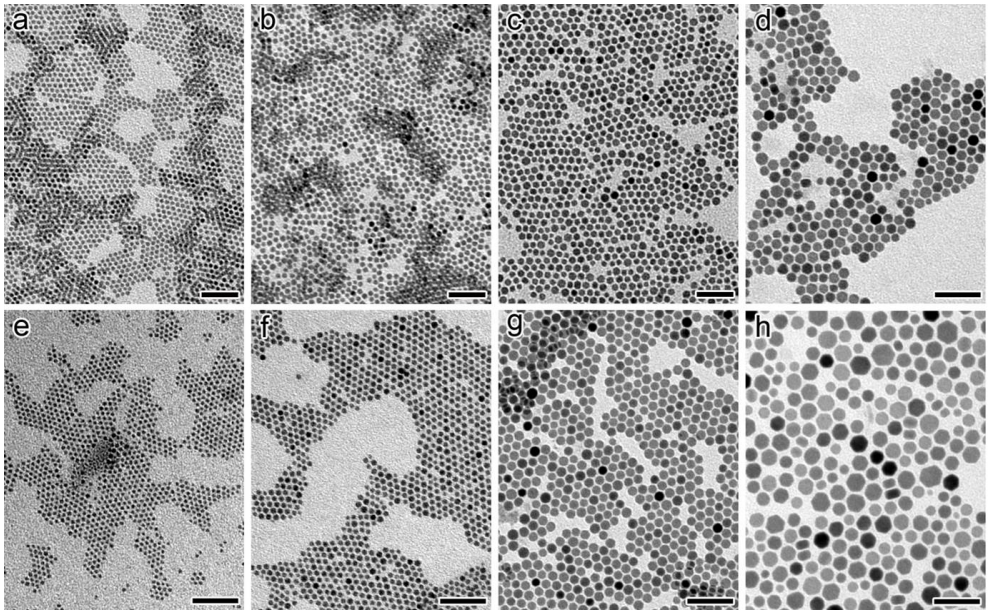

Fig. S5 Shape and size evolution of Sample C (a-d) and Sample B (e-f), and typical TEM images of the products obtained at different reaction time:(a, e) 60 min; (b, f) 100 min; (c) 180 min; (d) 210 min; (g) 140 min; (h) 240 min. All the scale bars are 50 nm.

Figure. S6

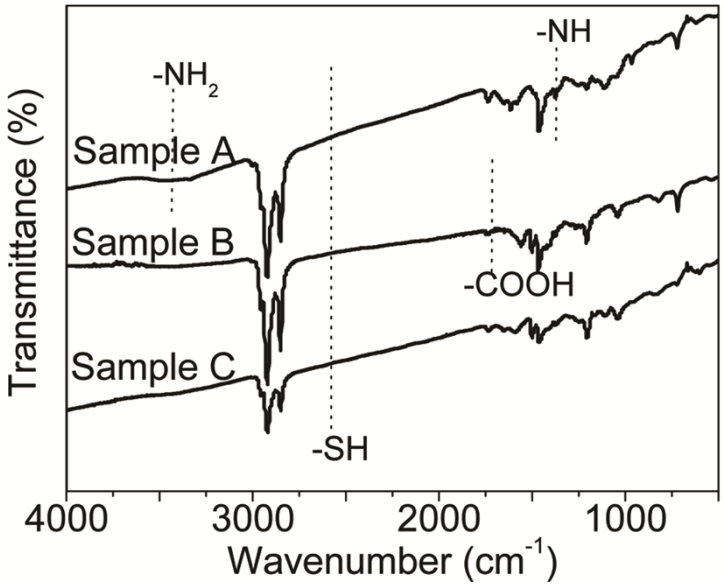

Fig. S6 FTIR patterns of Samples A-C synthesized by using OM, OA and ODE as co-solvents.

Figure. S7

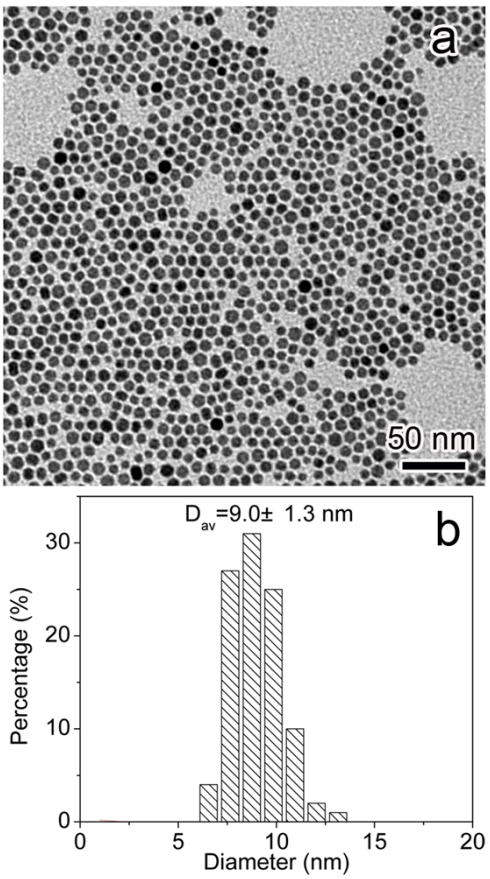

Fig.S7 (a) TEM image and (b) size distribution histogram of Sample C, which is used to study the effects of oxygen exposure time on the LSPR behavior.

Figure. S8

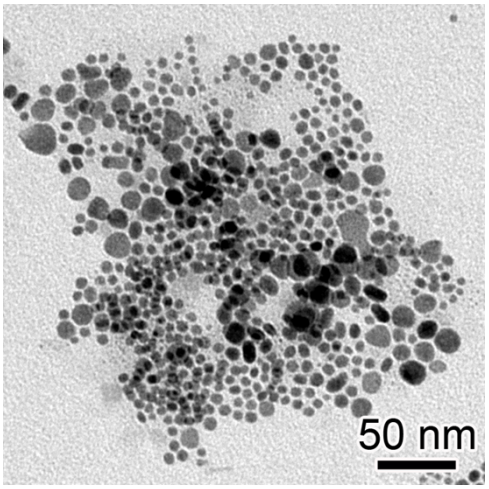

Fig. S8 TEM images of Sample C after exposure to air for 55 days.