# Supporting Information

## Facile preparation of silver nanoclusters self-assemblies with aggregation-induced emission by equilibrium shifting†

Yulian Li,[a] Weiyao Xi,[a] Irshad Hussain,[b] Meiling Chen*[c] and Bien Tan*[a]

a. *Key Laboratory for Large-Format Battery Materials and System, Ministry of Education, Hubei Key Laboratory of Material Chemistry and Service Failure, School of Chemistry and Chemical Engineering, Huazhong University of Science and Technology, Wuhan, 430074, China. Tel/Fax: +86 27 87558172; Email: bien.tan@mail.hust.edu.cn (Tan B).*

b. *Department of Chemistry & Chemical Engineering, SBA School of Science & Engineering (SSE), Lahore University of Management Sciences (LUMS), DHA, Lahore Cantt-54792, Pakistan.*

c. *Department of Stomatology, Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan 430074, China. Email: mqc05@126.com.*

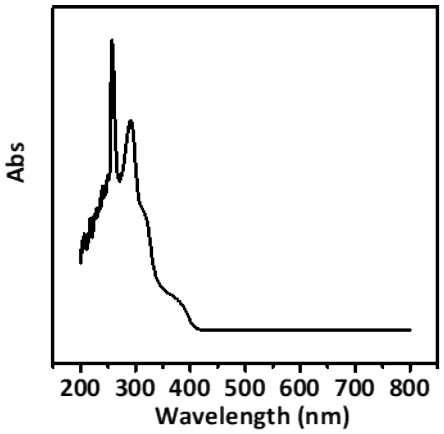


**Fig. S1** UV-vis absorption spectrum of AgNC assemblies dissolved in DMSO.

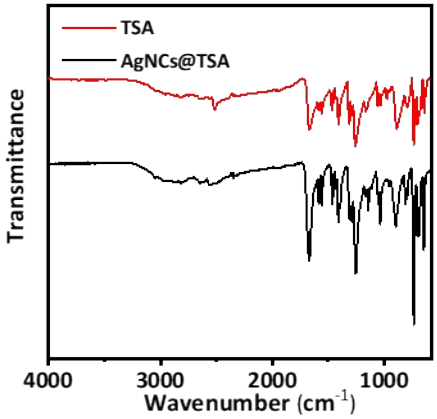


**Fig. S2** FT-IR spectra of ligand TSA and as-prepared silver nanocluster self-assemblies obtained in water at room temperature.

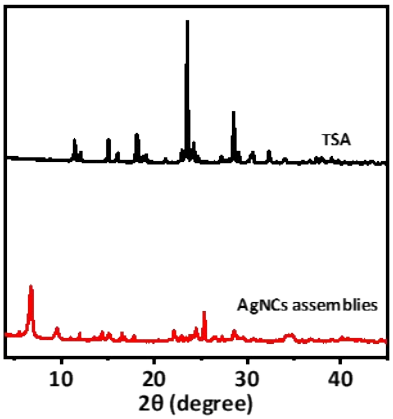


**Fig. S3** XRD spectra of ligand TSA and as-prepared silver nanocluster self-assemblies obtained in water at room temperature.

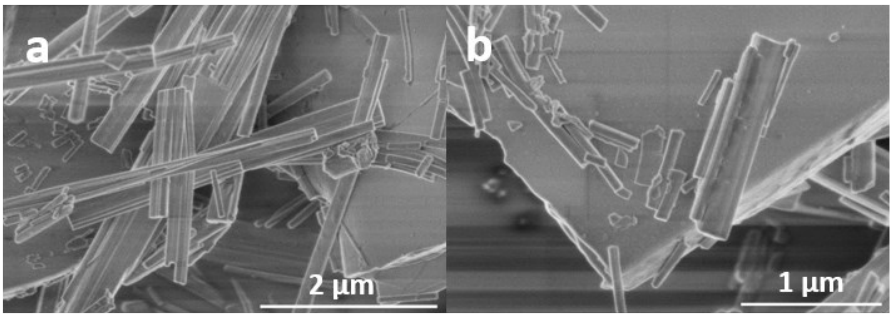


**Fig. S4** SEM images of the silver nanocluster assemblies obtained by the hydrothermal method.

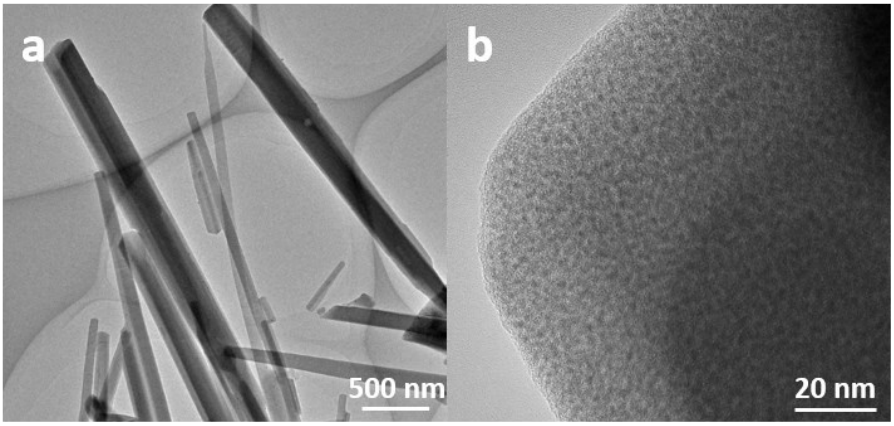


**Fig. S5** HRTEM images of the silver nanocluster assemblies obtained by the hydrothermal method.

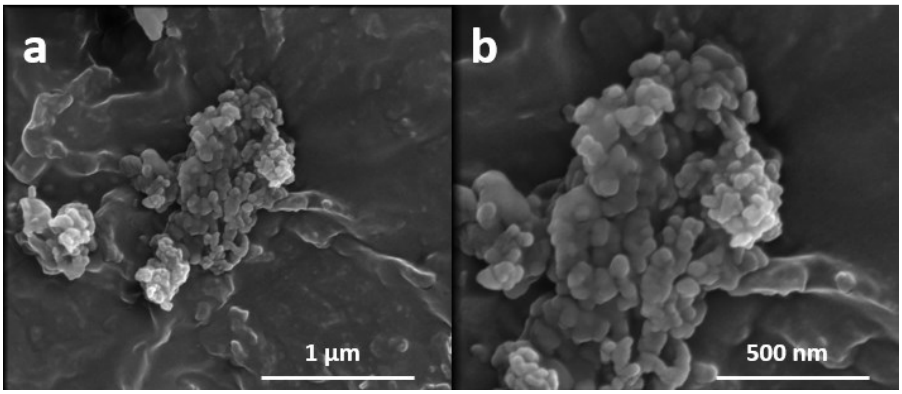


**Fig. S6** SEM images (a & b) of silver nanocluster self-assemblies obtained in MeOH.

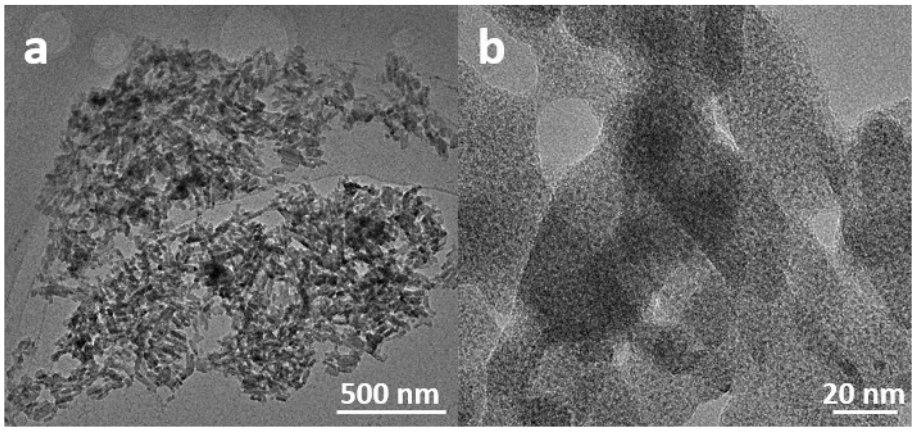


**Fig. S7** HRTEM images (a & b) of the silver nanocluster assemblies obtained in MeOH.

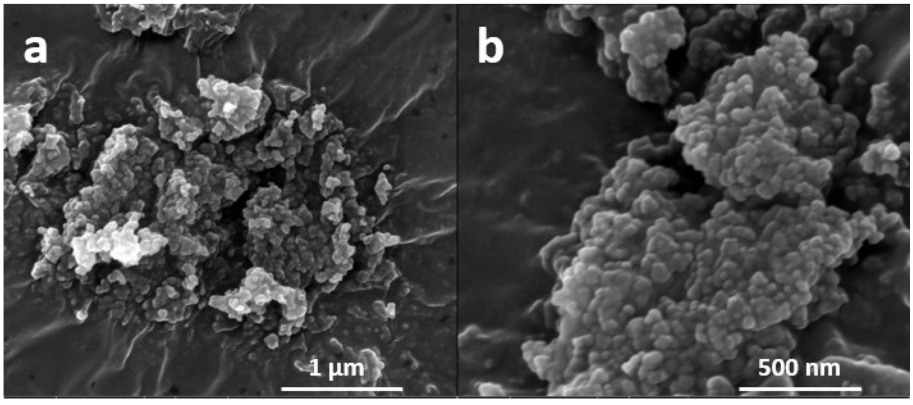


**Fig. S8** SEM images (a & b) of silver nanocluster self-assemblies obtained in EtOH.

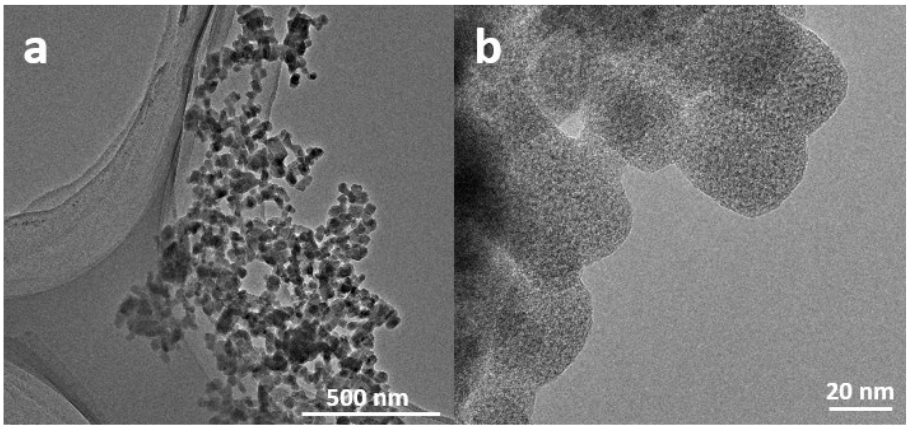


**Fig. S9** HRTEM images (a & b) of the silver nanocluster assemblies obtained in EtOH.

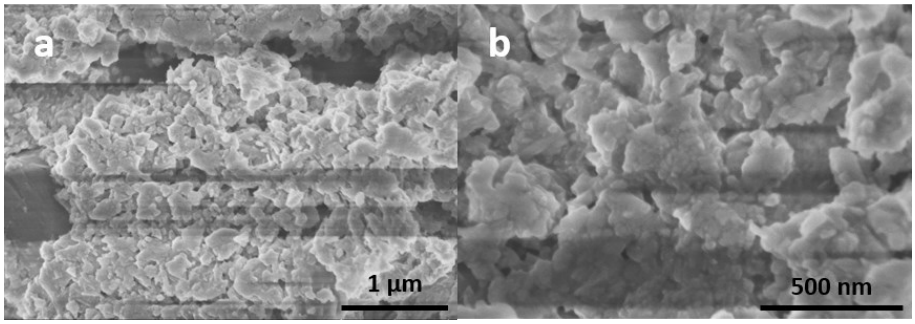


**Fig. S10** SEM images of silver nanocluster self-assemblies obtained in toluene.

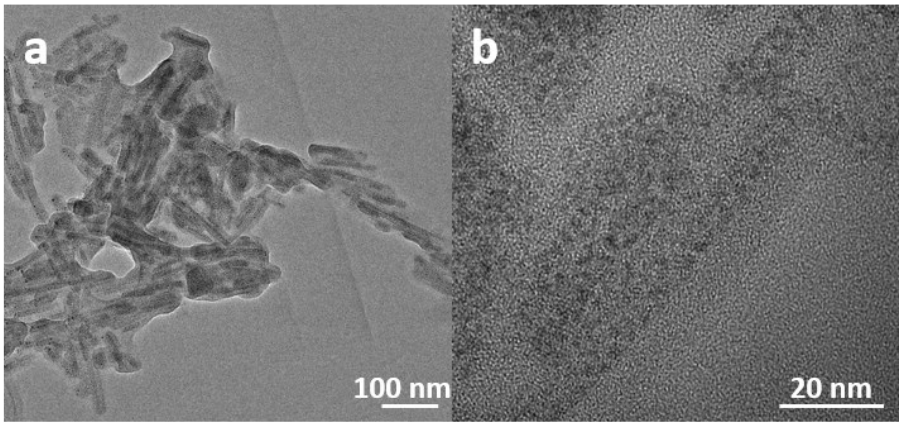


**Fig. S11** HRTEM of silver nanocluster self-assemblies obtained in toluene.

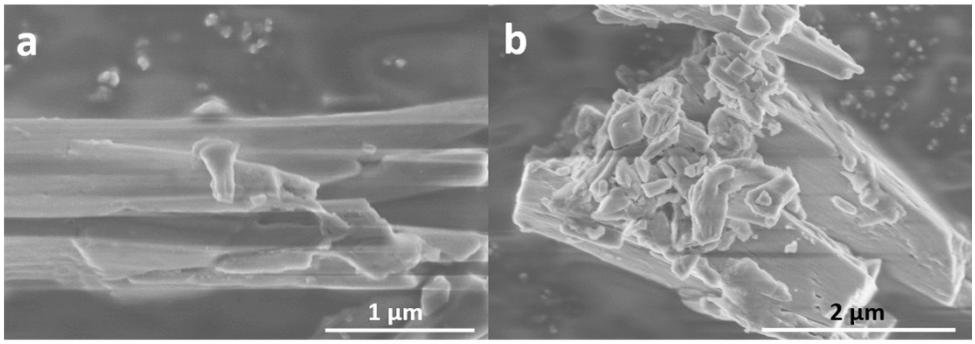


**Fig. S12** SEM images (a & b) of silver nanocluster self-assemblies obtained in THF.

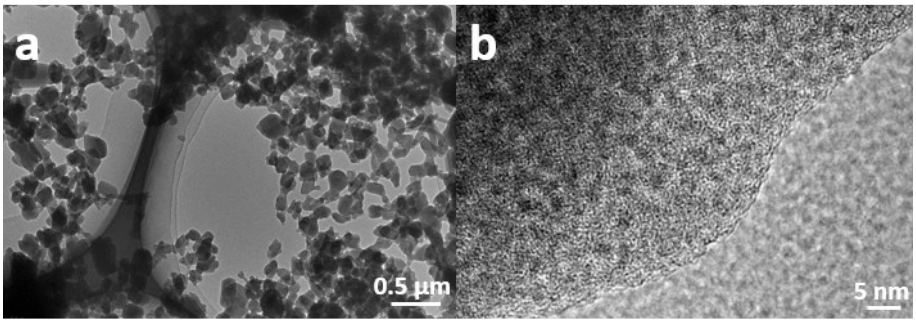


**Fig. S13** HRTEM (a & b) of silver nanocluster self-assemblies obtained in THF.

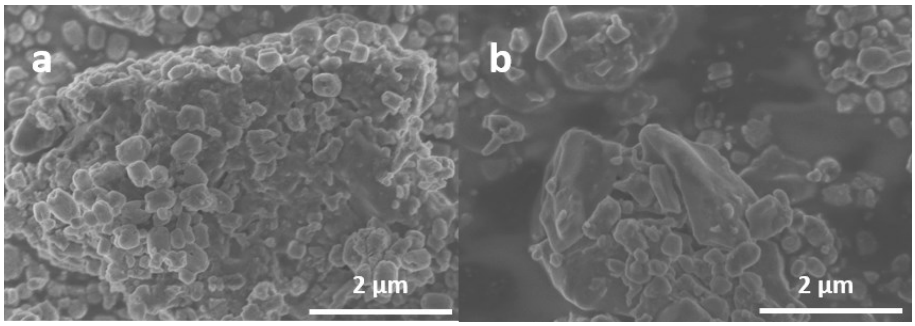


**Fig. S14** SEM images of silver nanocluster self-assemblies obtained in acetone.

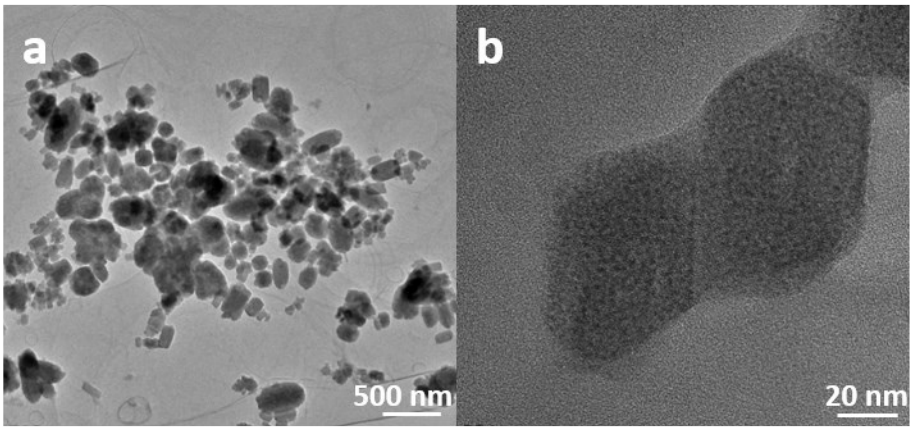


**Fig. S15** HRTEM (a & b) of silver nanocluster self-assemblies obtained in acetone.

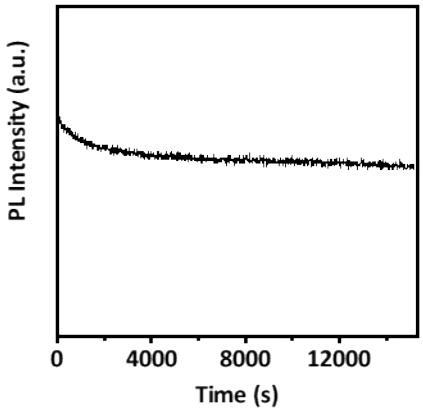


**Fig. S16** The stability of AgNC assemblies obtained in water at room temperature.

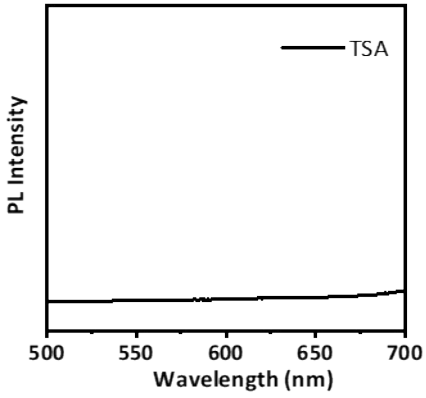


**Fig. S17** Photoluminescence emission spectra of ligand TSA with the excitation wavelength at 467 nm.

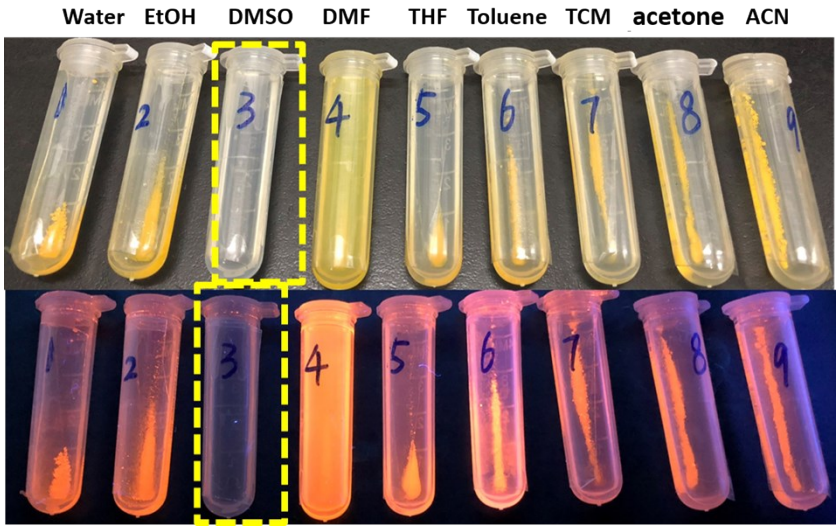


**Fig. S18** The as-prepared AgNCs@TSA powder dispersed in different solvents.

**Table S1** The quantum yield (QY) of self-assembled metal nanoclusters with literature reports

| NO. | self-assembled MNCs | Morphology | Absolute Quantum yield | References |
|---|---|---|---|---|
| 1 | blue-green emitting CuNCs | nanoribbons | 6.5% | *J. Am. Chem. Soc.,* 2015, **137**, 12906 |
| | yellow emitting CuNCs | nanosheets | 3.6% | |
| 2 | red emitting AuNCs | nanoribbons | 6.2% | *Angew. Chem. Int. Ed.,* 2019, **131**, 8223 |
| 3 | yellow emitting CuNCs | nanosheets | 15.4% | *J. Am. Chem. Soc.,* 2017, **139**, 4318 |
| | blue-green emitting CuNCs | block | 6.3% | |
| | red emitting CuNCs | net-like aggregates | 0.04% | |
| 4 | red emitting CuNCs | slat-like aggregates | 0.5% | *Chem. Commun.,* 2015, **51**, 11983 |
| | blue emitting CuNCs | amorphous aggregates | 13.2% | |
| 5 | green emitting AgNCs | nanosheets | 25.6% | *Chem. Commun.,* 2014, **50**, 9565 |
| 6 | red emitting AgNCs | Not mentioned | 4.1% | *Chem. Commun.,* 2014, **50**, 237 |
| 7 | red emitting AgNCs | nanofibers | 13.05% | This Work |