

Electronic Supplementary Information

Enhanced Performance of Blue Polymer Light-emitting Diodes by Incorporation of Ag Nanoparticles through Ligand-exchange Process

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Attachment of various metal nanoparticles (NPs) on ITO through ligand-exchange process

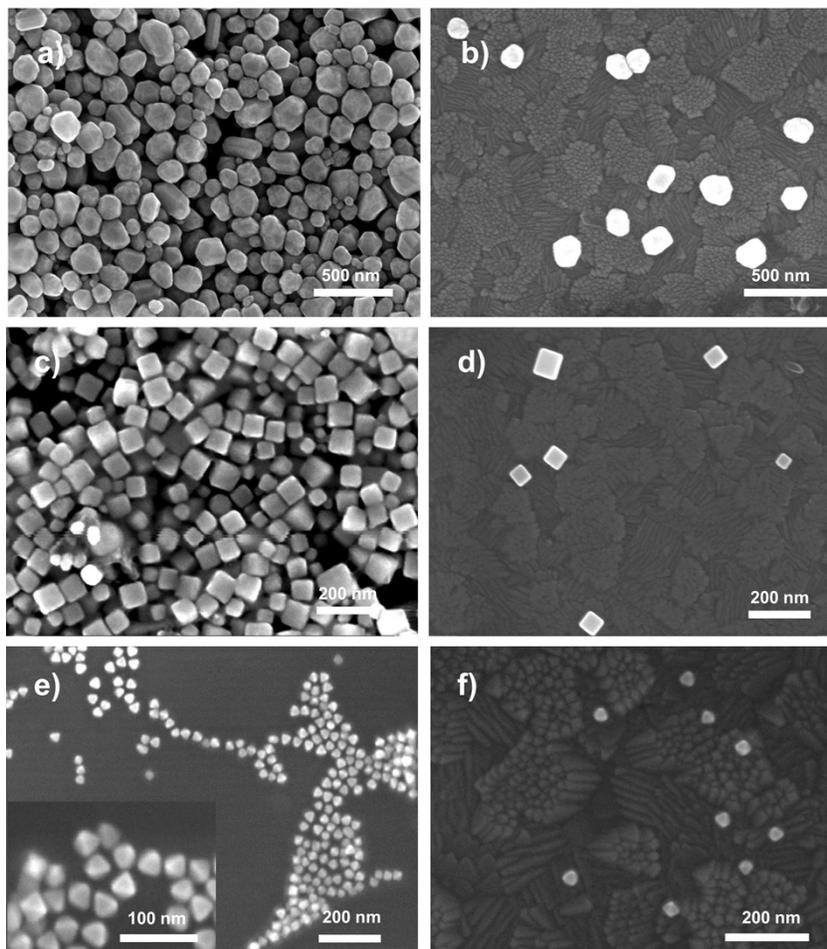


Figure S1. SEM images of a) 140 nm-sized Ag NPs as a solution and b) as attached on the ITO, c) Ag nanocubes as a solution and d) as attached on the ITO, and e) Au octahedral NPs as a solution and f) as attached on the ITO.

To investigate the versatility of the ligand-exchange process, various metal NPs were synthesized and introduced at the surface of the ITO through the process. The particles were synthesized based on the previous reports. [1-3] The average diameter or edge-length of Ag NPs, Ag nanocubes, and Au octahedral NPs were 140 nm, 55 nm, and 24 nm.

Effects of the extra amount of the Ag NPs on the devices

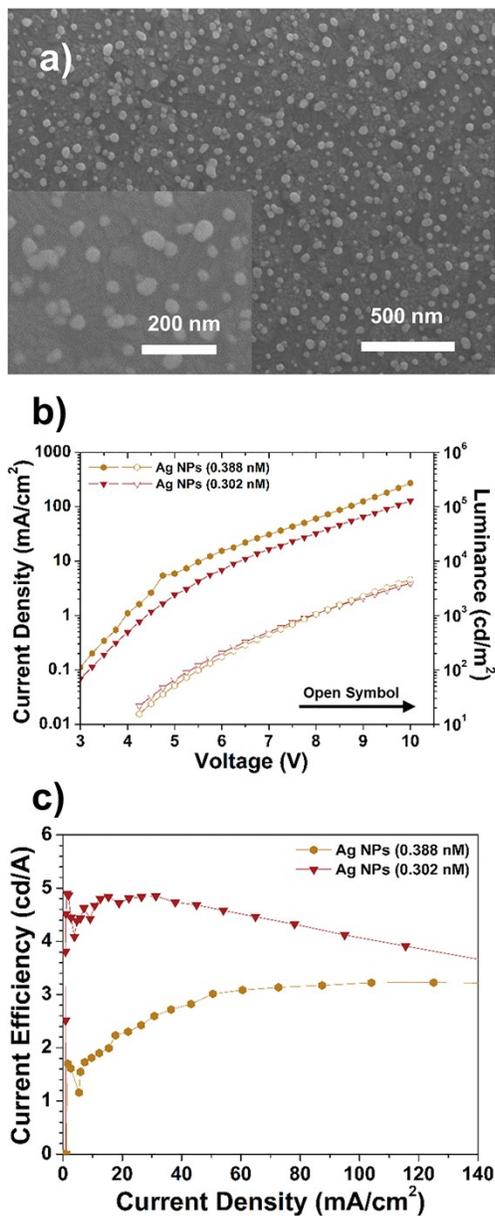


Figure S2. a) SEM images of the 0.388 nM of Ag NPs attached on the ITO. (inset) Enlarged SEM images representing local aggregation of the particles. b) Current density and luminance of the device versus applied bias. c) Current efficiency curves for the devices with two different concentration of the Ag NPs.

Reference

- [1] K. H. Park, S. H. Im, O. O. Park, *Nanotechnology*, 2011, **22**, 045602
- [2] S. E. Skrabalak, L. Au, X. Li, Y. Xia, *Nat. Protoc.* 2007, **2**, 2182-2190
- [3] D. Y. Kim, W. Li, Y. Ma, T. Yu, Z.-Y. Li, O. O. Park, Y. Xia, *Chem. Eur. J.* 2011, **17**, 4759-4764