Supporting Information

Epitaxially aligned submillimeter-scale silver nanoplates grown by simple vapor transport

Youngdong Yoo,[a] Si-in Kim,[b] Sol Han,[b] Hyoban Lee,[b] Jihwan Kim,[b] Han Sung Kim,[c] Jae-Pyoung Ahn,[c] Taejoon Kang,[d,e] Jaebum Choo,[f] and Bongsoo Kim,[b]*

[a]Department of Chemistry, Ajou University, Suwon 16499, Korea.

[b]Department of Chemistry, KAIST, Daejeon 34141, Korea.

[c]Advanced Analysis Center, KIST, Seoul 02792, Korea.

[d]Bionanotechnology Research Center, KRIBB, Daejeon 34141, Korea

[e]Department of Nanobiotechnology, KRIBB School of Biotechnology, UST, Daejeon 34113, Korea

[f]Department of Chemistry, Chung-Ang University, Seoul 06974, Korea.

E-mail: bongsoo@kaist.ac.kr

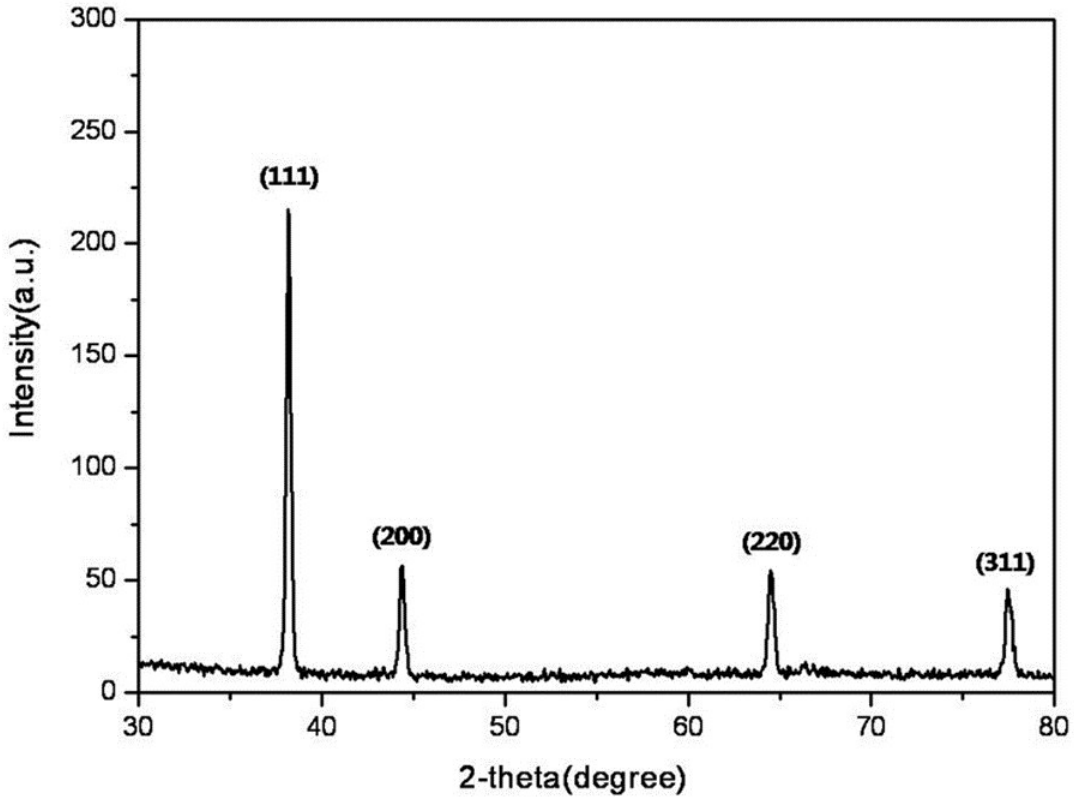

Figure S1. XRD patterns of as-synthesized Ag nanoplates. All diffraction peaks of the Ag nanoplates correspond to face-centered cubic (fcc) Ag (JCPDS #04-0783). XRD patterns of the specimen were recorded on a Rigaku D/max-RC (12 kW) diffractometer with a Cu source. The measurement was performed with a detector scan at a fixed incidence angle of 1°.

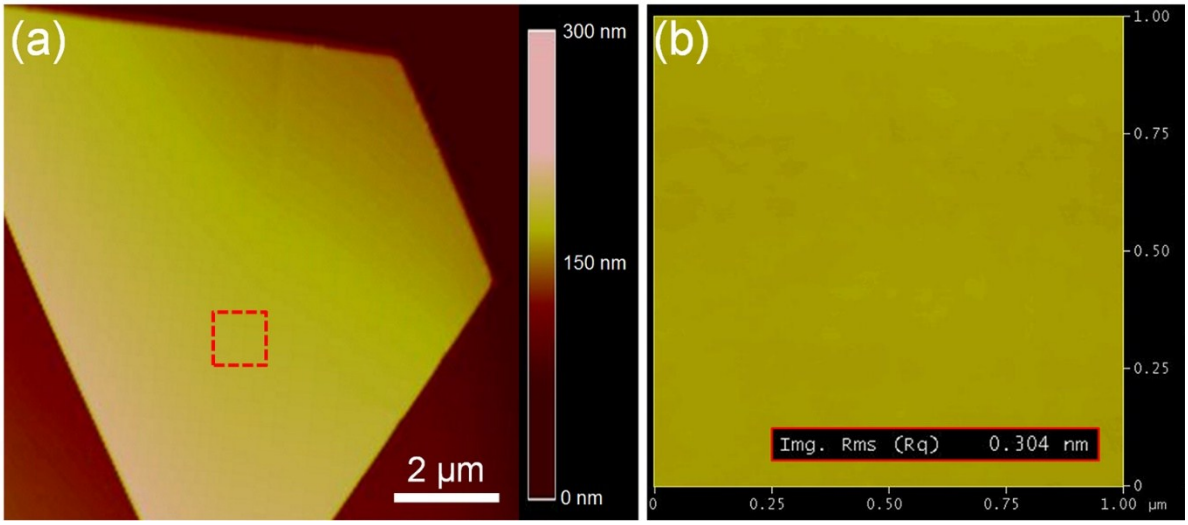

Figure S2. Atomic force microscopy (AFM) data of an as-synthesized Ag nanoplate. (a) AFM height image of the Ag nanoplate. (b) High-resolution AFM height image of the dotted red square in (a), taken with a 1 μm × 1 μm field of view. For the measurements, the Ag nanoplates were transferred onto a precleaned Si substrate through a dry transfer method. The root-mean-square roughness (Rq) is only 0.304 nm, confirming that the Ag nanoplate possess atomically clean and flat surfaces without any contamination. Given that the atomic radius of Ag is approximately 0.144 nm, this Rq value is noteworthy.

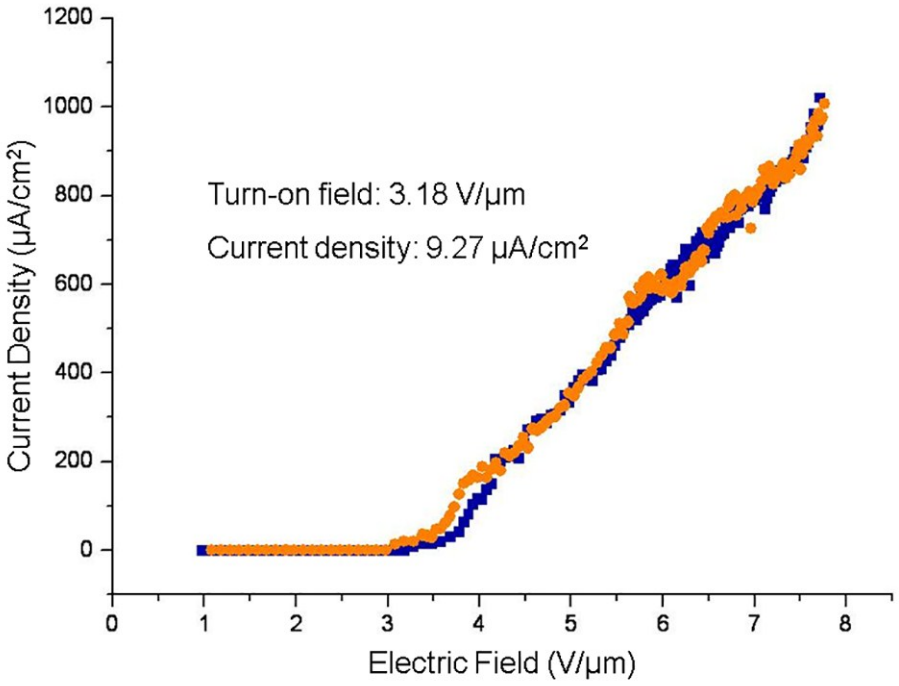

Figure S3. Field emission current density versus applied electrical field measured on gold-coated Ag nanoplate arrays on an *r*-cut sapphire substrate. The sample was prepared by coating as-synthesized Ag nanoplate arrays on *r*-cut sapphire with gold through sputtering so that the whole sample was conductive. The measurements were performed twice. The turn-on voltage of the nanoplate arrays was 3.18 V/μm and the emission current density reached 9.27 μA/cm^2.