Electronic Supplementary Information

Nucleation-Mediated Synthesis and Enhanced Catalytic Properties of Au-Pd Bimetallic Tripods and Bipyramids with Twinned Structures and High-Energy Facets

Lei Zhang,*[a] Xue Wang,[b] Qiaoli Chen[b] and Zhiyuan Jiang*[b]

[a]*Key Laboratory for Green Chemical Technology of Ministry of Education, School of Chemical Engineering and Technology, Tianjin University, Collaborative Innovation Center of Chemical Science and Engineering, Tianjin 300072, China*

E-mail: zhangl@tju.edu.cn

[b]*State Key Laboratory for Physical Chemistry of Solid Surfaces & Department of Chemistry, College of Chemistry and Chemical Engineering, Xiamen University, Xiamen 361005, China*

E-mail: zyjiang@xmu.edu.cn

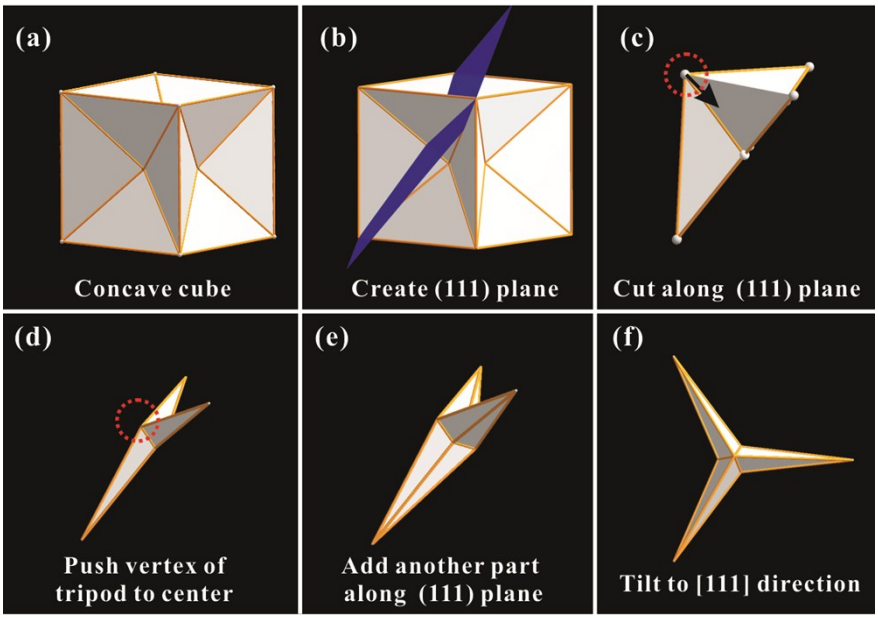

Fig. S1 The models showing that the tripods exposed by {hkk} facets are evolved from a concave cubic structure.

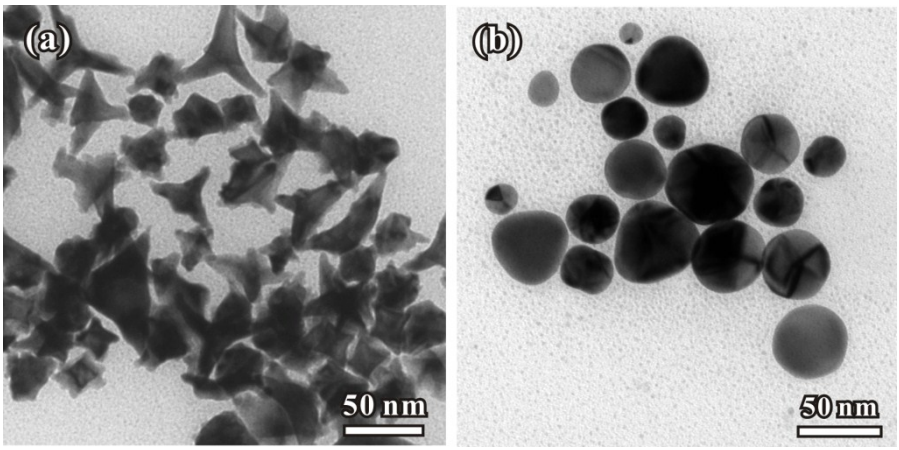

Fig. S2 (a) TEM image of Au-Pd NCs that were prepared using the standard procedure, expect for the introduced H_2PdCl_4 increased to 1 mL. (b) TEM image of Au NCs that were prepared using the standard procedure, expect for the absence of H_2PdCl_4.

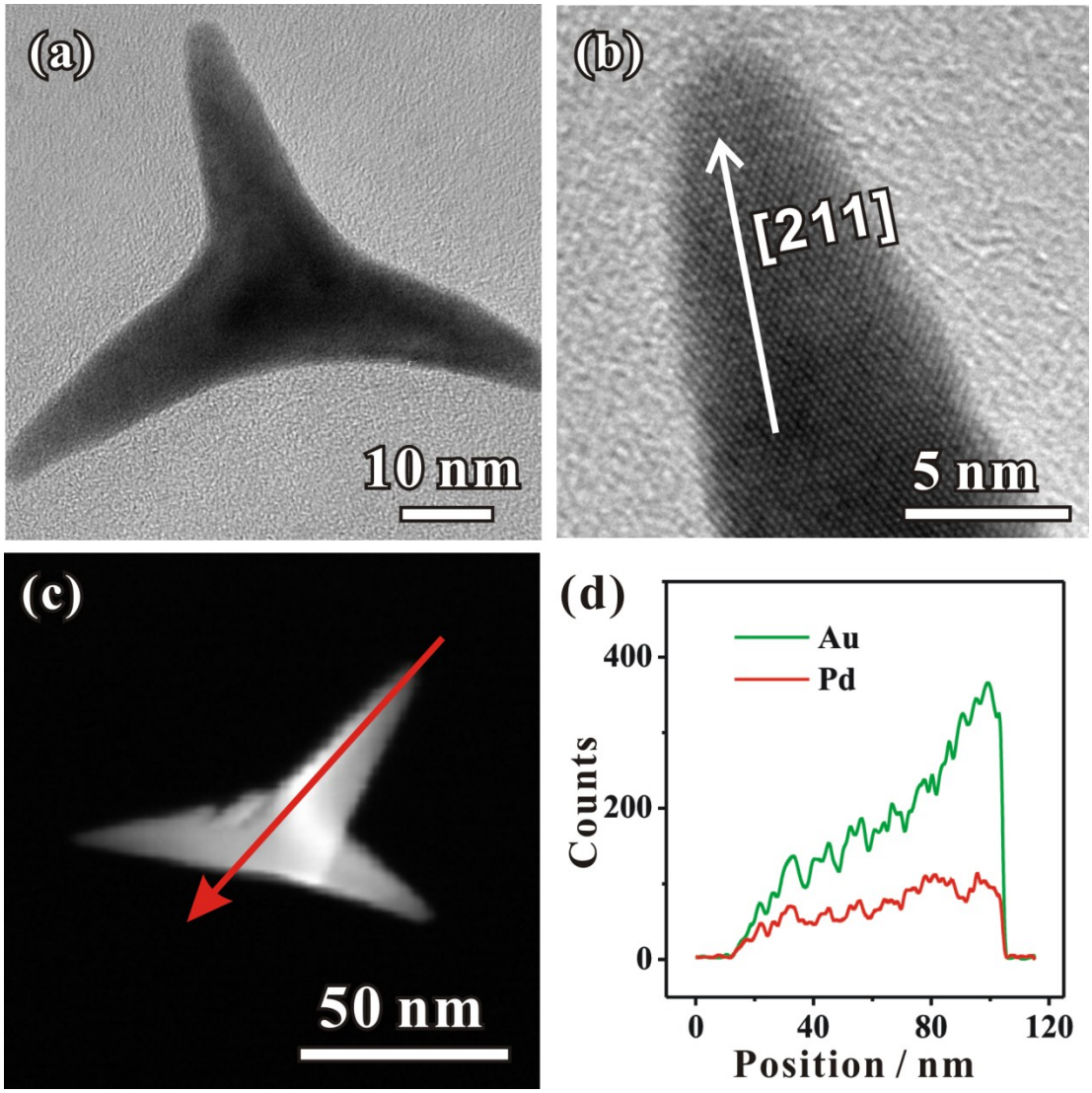

Fig. S3 (a, b) The HR-TEM images of one individual tripod viewing along <111> direction. (c, d) The cross-sectional compositional line-scanning profile of the Au-Pd tripods.

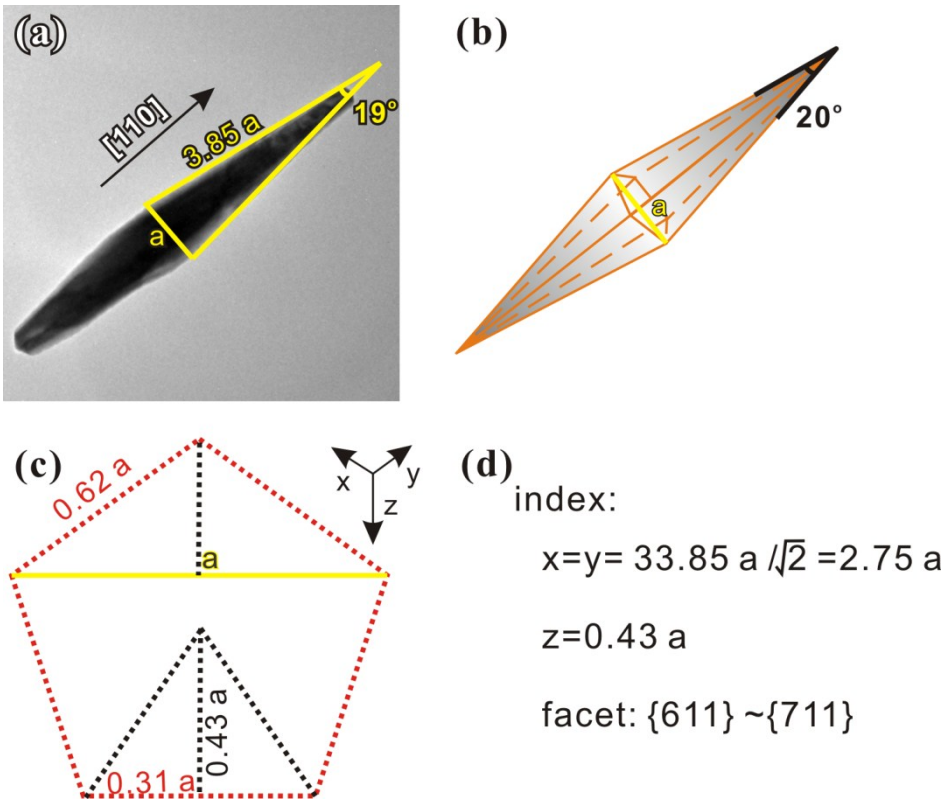

Fig. S4 (a, b) The TEM image of one individual bipyramid and corresponding schematic model. (c, d) The calculation of the geometric parameters of bipyramid conclude that the surfaces of bipyramids range from {611} to {711} facets.

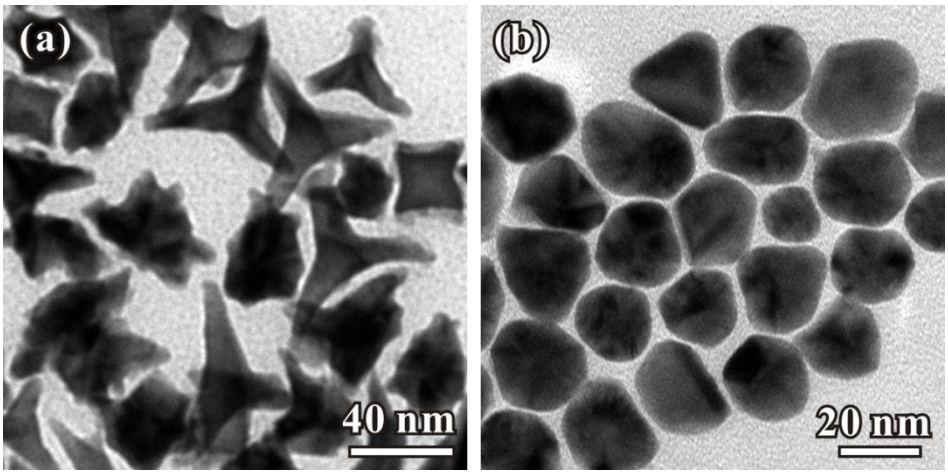

Fig. S5 (a) TEM image of Au-Pd bimetallic nanocrystals that were prepared using the standard procedure, expect in the absence of $Cu(CH_3COO)_2$. (b) TEM image of spherical Au-Pd nanocrystals that were prepared using the standard procedure, expect adding 2 mL of $Cu(CH_3COO)_2$ into the solution.