

Supporting Information

Defects by Design: Synthesis of Palladium Nanoparticles with Extended Twin Defects and Corrugated Surfaces

Melissa E. King and Michelle L. Personick*

Department of Chemistry, Wesleyan University, 52 Lawn Avenue,
Middletown, Connecticut 06459, United States

Email: mpersonick@wesleyan.edu

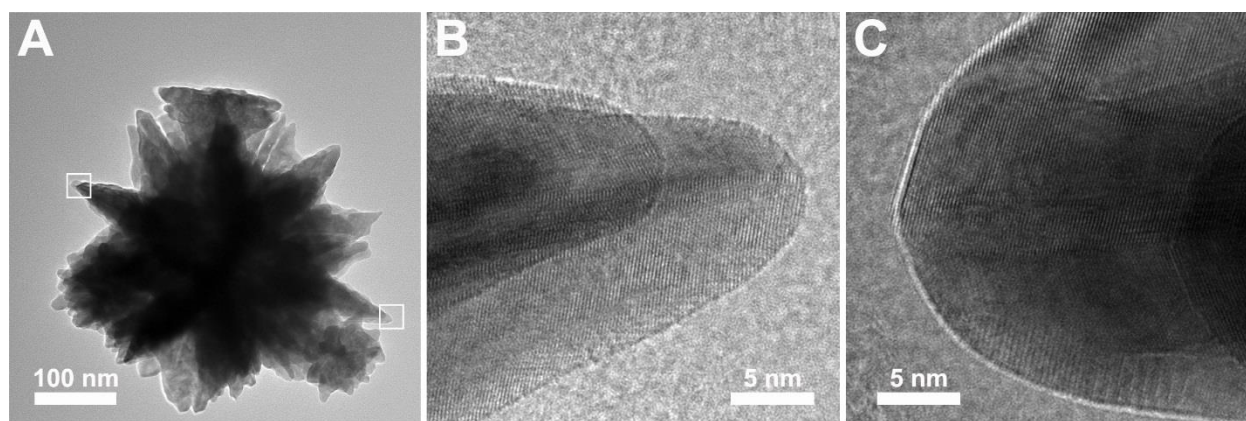


Fig. S1. High-resolution TEM images showing the presence of twin planes in the fins of a concave icosahedron. The areas highlighted by boxes in the low-magnification image in (A) are the sites of the high-magnification images in (B) and (C).

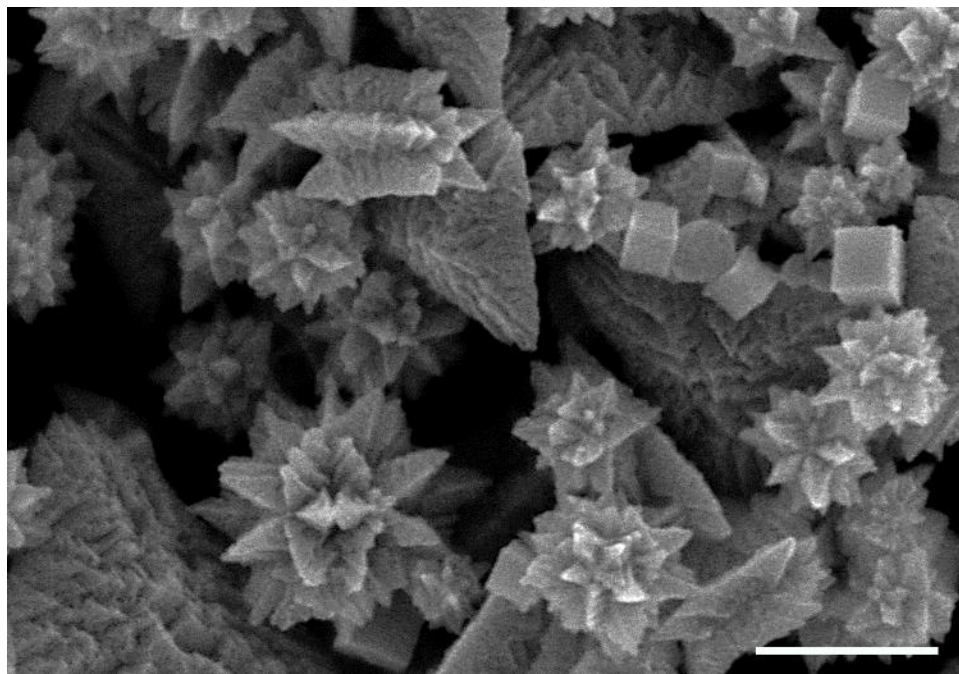


Fig. S2. High-magnification SEM image of the twinned palladium nanoparticles, illustrating their substantial surface corrugation. Scale bars: 200 nm.

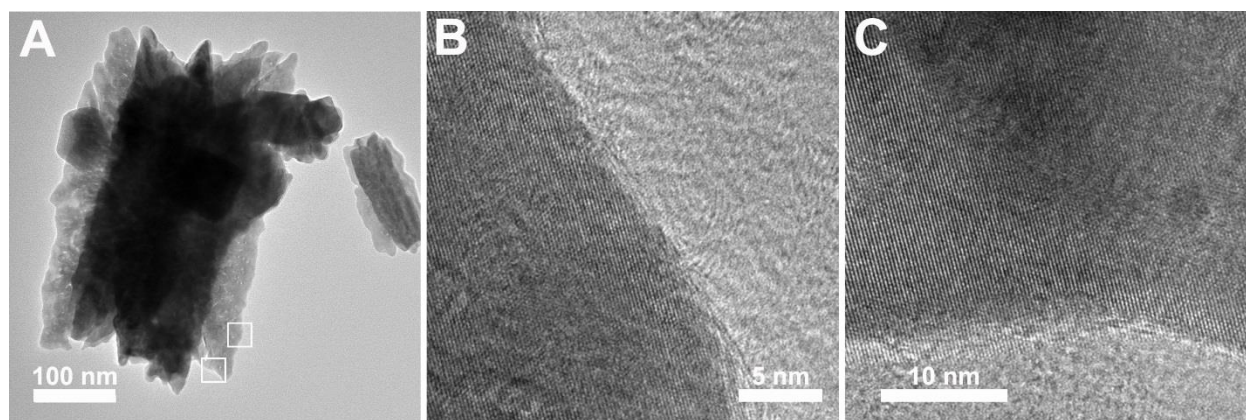


Fig. S3. High-resolution TEM images showing atomic scale roughness and undercoordination at the surface of the corrugated fins of a pentatwinned rod. The areas highlighted in the low-magnification image in (A) are the sites of the high-magnification images in (B) and (C).

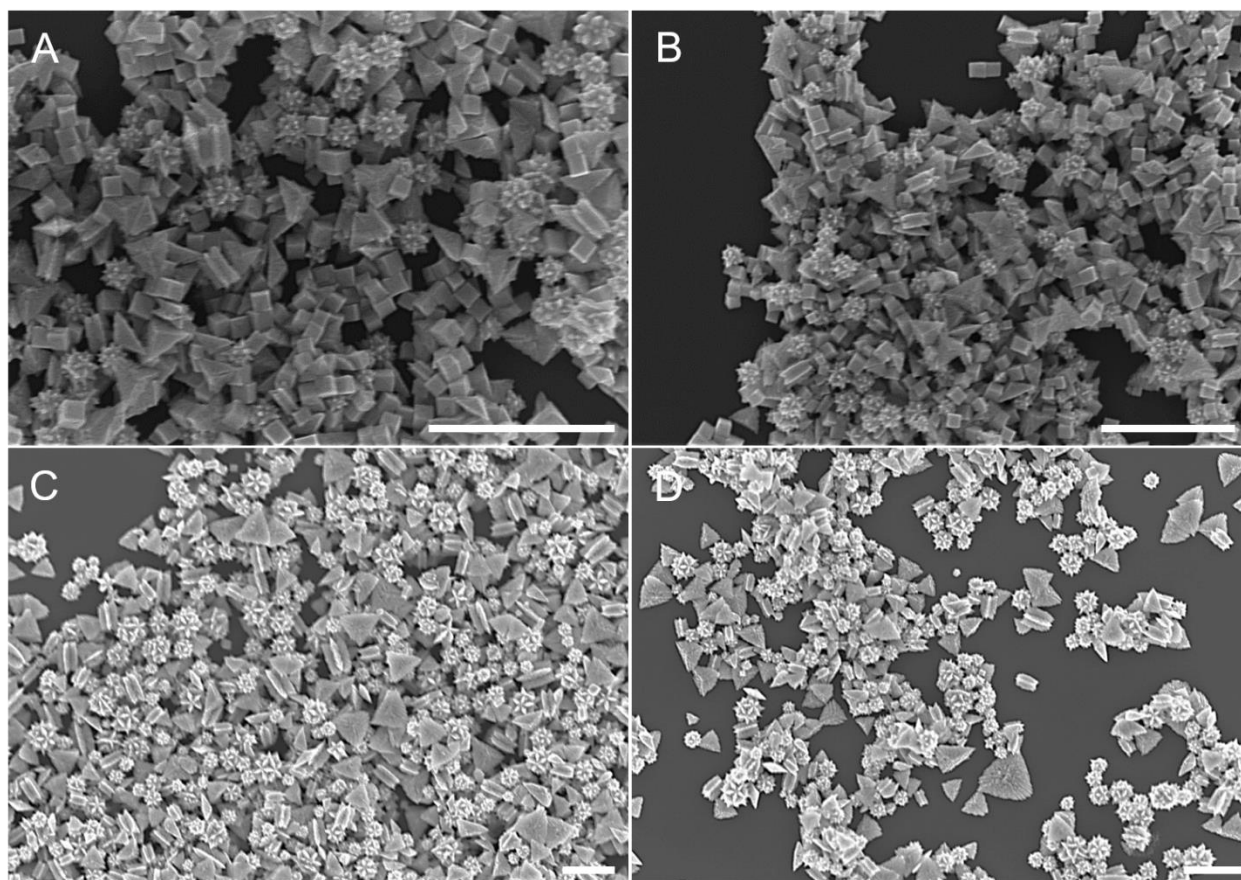


Fig. S4. SEM images of particles grown using pentatwinned and icosahedral gold seeds in the absence and presence of nitric acid: (A) pentatwinned seeds, no acid; (B) icosahedral seeds, no acid; (C) pentatwinned seeds, 30 μL of HNO_3 ; and (D) icosahedral seeds, 30 μL of HNO_3 . Scale bars: 600 nm.

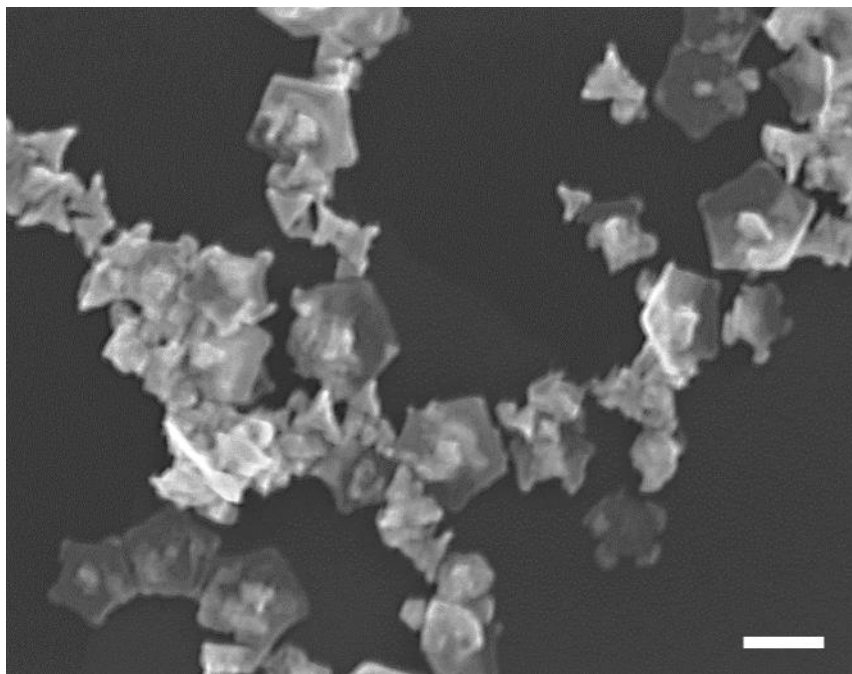


Fig. S5. SEM image of particles grown with no seeds or acid present in the growth solution. Scale bar: 200 nm.

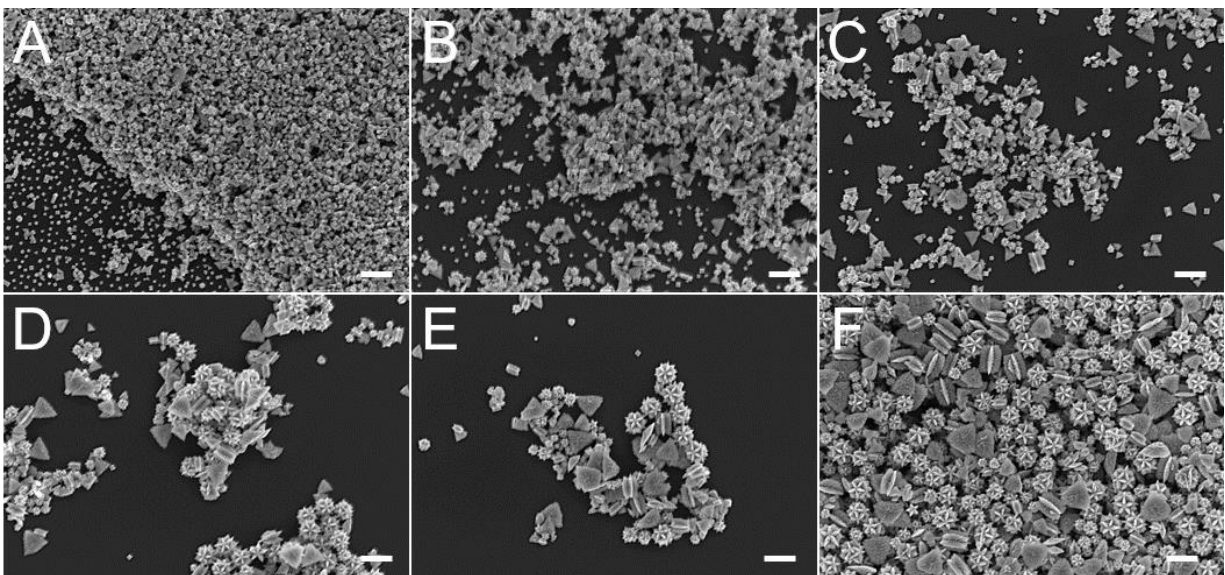


Fig. S6. Large area SEM images illustrating a distinct change in particle morphology and an increase in overall particle size and size distribution with increasing amounts of 1M nitric acid in the growth solution: (A) no acid; (B) 10 μL of HNO_3 ; (C) 20 μL of HNO_3 ; (D) 30 μL of HNO_3 ; (E) 40 μL of HNO_3 ; and (F) 50 μL of HNO_3 . Scale bars: 500 nm.