

Description of Additional Supplementary Files

File Name: Supplementary Movie 1

Description: Movie describing the structural changes in the Pd NP shown in Figures 1 and 2 during the heating ramp from 300 to 500 °C. The labeled temperature is the temperature set in the program. The image sequence has been drift-corrected, accelerated by 10×.

File Name: Supplementary Movie 2

Description: Movie describing the structural changes in the Pd NP shown in Figures 1 and 2 during the cooling ramp from 500 to 300 °C. The labeled temperature is the temperature set in the program. The image sequence has been drift-corrected and accelerated by 10×.

File Name: Supplementary Movie 3

Description: Movie describing the structural changes in several Pd NPs during a heating ramp from 300 to 500 °C. The labelled temperature is the temperature set in the program. The image sequence has been driftcorrected and accelerated by 10×.

File Name: Supplementary Movie 4

Description: : Movie describing the structural changes in the same Pd NPs captured in Supplementary Movie 3 during the cooling ramp from 500 to 300 °C. The labeled temperature is the temperature set in the program. The image sequence has been drift-corrected and accelerated by 10×.

File Name: Supplementary Movie 5

Description: Movie describing the structural changes in five Pd NPs during the heating ramp from 400 to 600 °C shown in Figure 3. The labeled temperature is the temperature set in the program. The image sequence has been drift-corrected and accelerated by 10×.

File Name: Supplementary Movie 6

Description: Movie describing the structural changes in the same Pd NPs captured in Supplementary Movie 5 during the cooling ramp from 600 to 400 °C as shown in Figure 3. The labeled temperature is the temperature set in the program. The image sequence has been drift-corrected and accelerated by 10×.