Supporting Information

11 April, 2009

Ms. No.: la-2009-011108

Quantitative Analysis of the Stability of Pd Dendrimer-Encapsulated Nanoparticles

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5 Pages

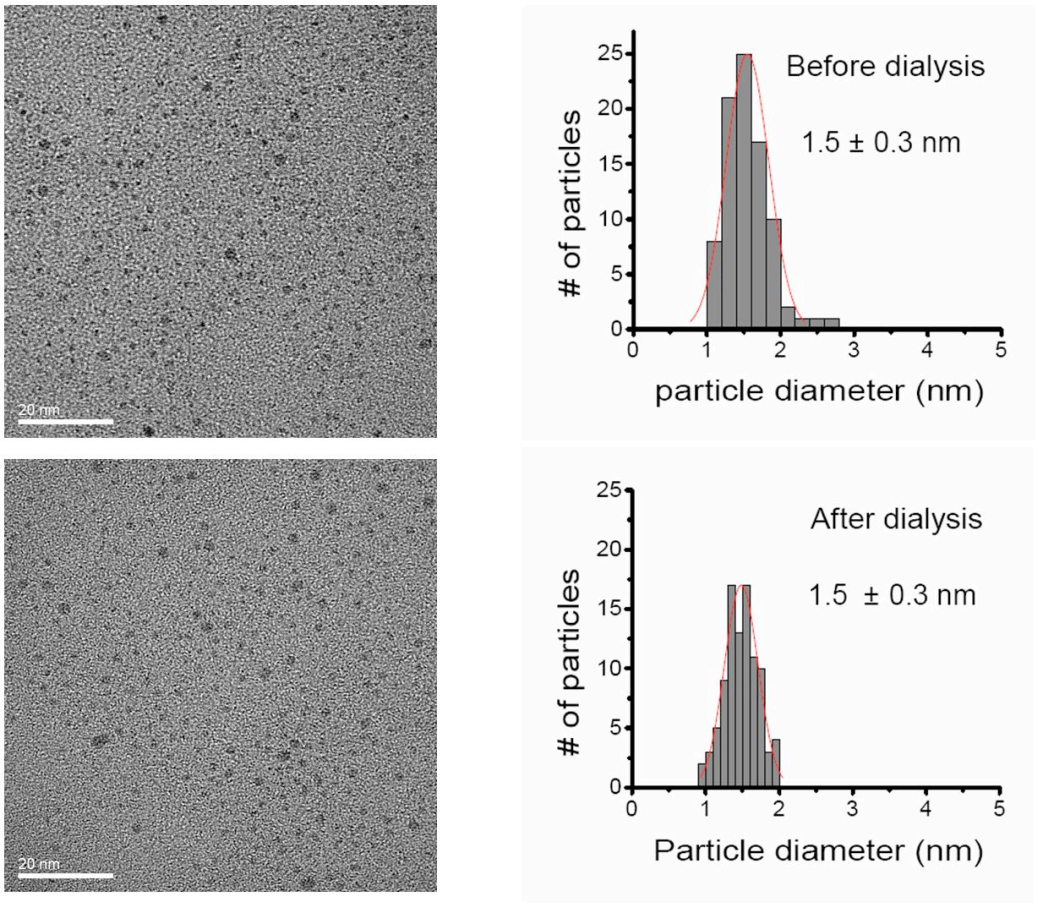

Figure S1. TEM images and size-distribution histograms for Pd DENs before and after dialysis. TEM grids were prepared as described in the experimental section. Particle diameters were measured manually using Digital Micrograph software and a histogram was constructed from the tabulated values of 100 particles using Microcal Origin.

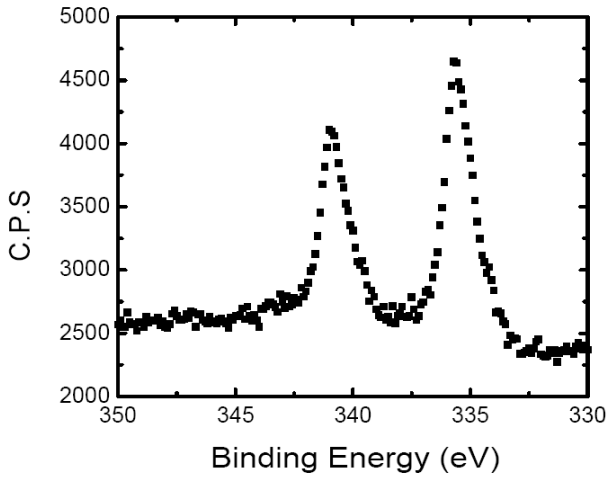

Figure S2. An X-ray photoelectron spectrrum (XPS) spectrum of freshly prepared G6-OH(Pd_{147}) DENs. The peaks at 335.7 and 341.0 eV correspond to the $3d_{5/2}$ peaks of Pd(0). XPS of freshly prepared 2.00 μM G6-OH(Pd_{147}) was performed using a Kratos Axis Ultra DLD spectrometer having a monochromatic Al Kα X-ray source. The spectrum was obtained in charge-compensation mode at a pass energy of 20 eV, a resolution of 0.1 eV, and a dwell time of 1.00 s. The samples were prepared by drop-casting a freshly prepared 2.00 μM Pd DEN solution onto Au-coated Si wafers. The wafers were dried under vacuum. To correct for charging, peak locations were referenced to the most intense carbon peak, assumed to be the C-N bond of the dendrimer, which is present at 286.0 eV.[1,2]

Figure S3. The results of the addition of $AgNO_3$ to solutions containing dialyzed DENs (left), undialyzed DENs (center), and the KCl control (right) are shown. The calculated concentration of Cl^- in undialyzed 2.0 μM G6-OH(Pd_{147}) DENs, introduced as K_2PdCl_4 in the starting material, is 1.18 mM. The KCl control contained 1.18 mM of KCl in water. A ten-fold excess of Ag^+, with respect to this concentration of Cl^-, was added in the form of $AgNO_3$ to each solution. The minimum detectable amount of Cl^- was determined from the solubility product of AgCl as 13.4 μM using the following equilibrium equation, where K_{sp} is the solubility product for solid AgCl (1.8×10^{-10}).

$$AgCl(s) \xrightarrow{k_{sp}} Ag^+ + Cl^-$$

References

1. Barr, T. L. *CRC Press* **1994.**

2. Lo, S. H. Y.; Wang, Y.-Y.; Wan, C.-C. *J. Colloid Interface Sci.* **2007**, *310*, 190-195.