

Preparation and catalytic evaluation of ruthenium-nickel dendrimer encapsulated nanoparticles via intradendrimer redox displacement of nickel nanoparticles

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Supporting Information

DEN	Rate constant, k_{avg} , s ⁻¹
Pd ₃₀	1.00 + 0.30
Pt ₃₀	0.18 + 0.06
Au ₃₀	0.25 +0.08

Table S-1. Comparison of the observed kinetic rate constants using monometallic DENs prepared in G4-OH dendrimers. DEN synthesis was based on references 4 and 10, and kinetic reaction conditions were similar to those described in the main text.

Figure S1. Selected TEM images of G4-OH(Ru₂₀) prepared via (Ni⁰)₃₀ redox displacement. Experiments were performed on a JEOL 2010F operating at 200 keV. Particle size counts were performed using ImageJ software; the average particle size was calculated to be 1.0 ± 0.1 nm.

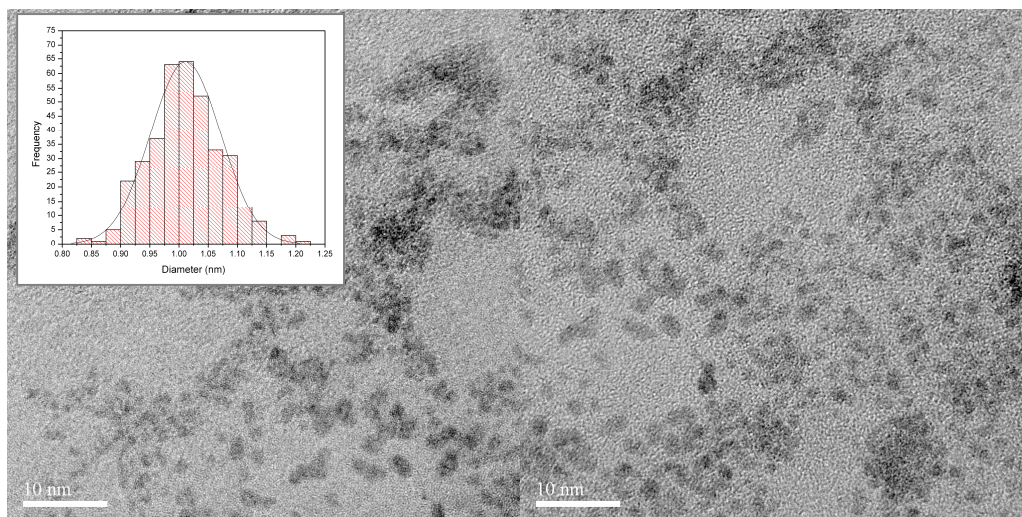


Figure S2. EDS data for G4-OH(Ru₂₀) DENs prepared via (Ni⁰)₃₀ redox displacement.

Element	Peak	Area	k	Abs	Weight	Weight	Atomic
					%	%	%
	Area	Sigma	factor	Corn.		Sigma	
Ni K	197	33	2.197	0.917	3.07	0.51	3.35
Cu K	5096	121	2.600	0.916	93.85	0.80	94.69
Ru L	289	62	1.442	0.959	3.09	0.65	1.96
Totals					100.00		

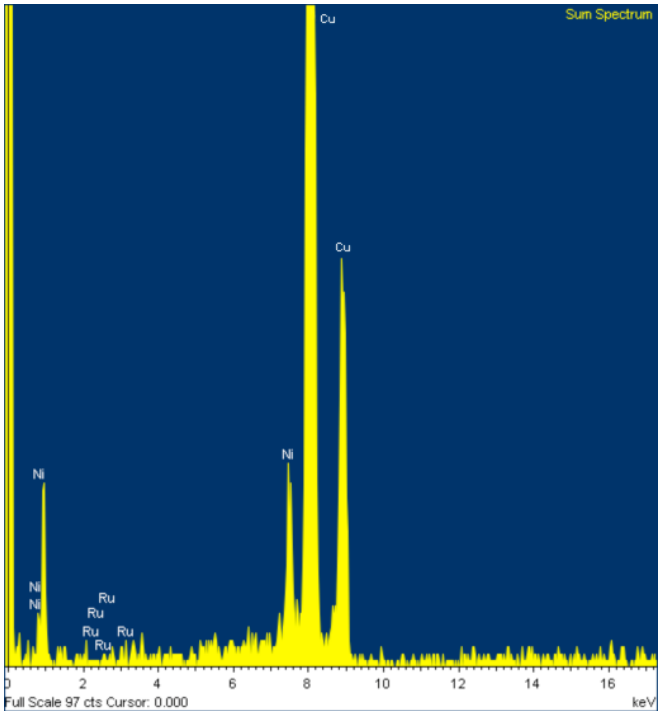


Figure S3. Time-dependent UV-visible spectra collected during the DEN-catalyzed reduction of *p*-nitrophenol (*p*-NP, 400 nm, 38 μ M) to *p*-aminophenol (*p*-AP, 300 nm) in the presence of excess sodium borohydride (38 mM). Initial concentration of DENs = 1.52 μ M.

