Supporting Information

Cerium Oxide Nanoparticles with Entrapped Gadolinium for High T_1 Relaxivity and ROS-scavenging Purposes

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Zeta potential and Dynamic Light Scattering

The Zeta potential was measured for the as-prepared Gd-CeNPs and the results are displayed in Figure S1. All Gd-CeNPs have Zeta potential in equal potential range above 30 mV, indicating good colloidal stability for all the prepared nanoparticles.

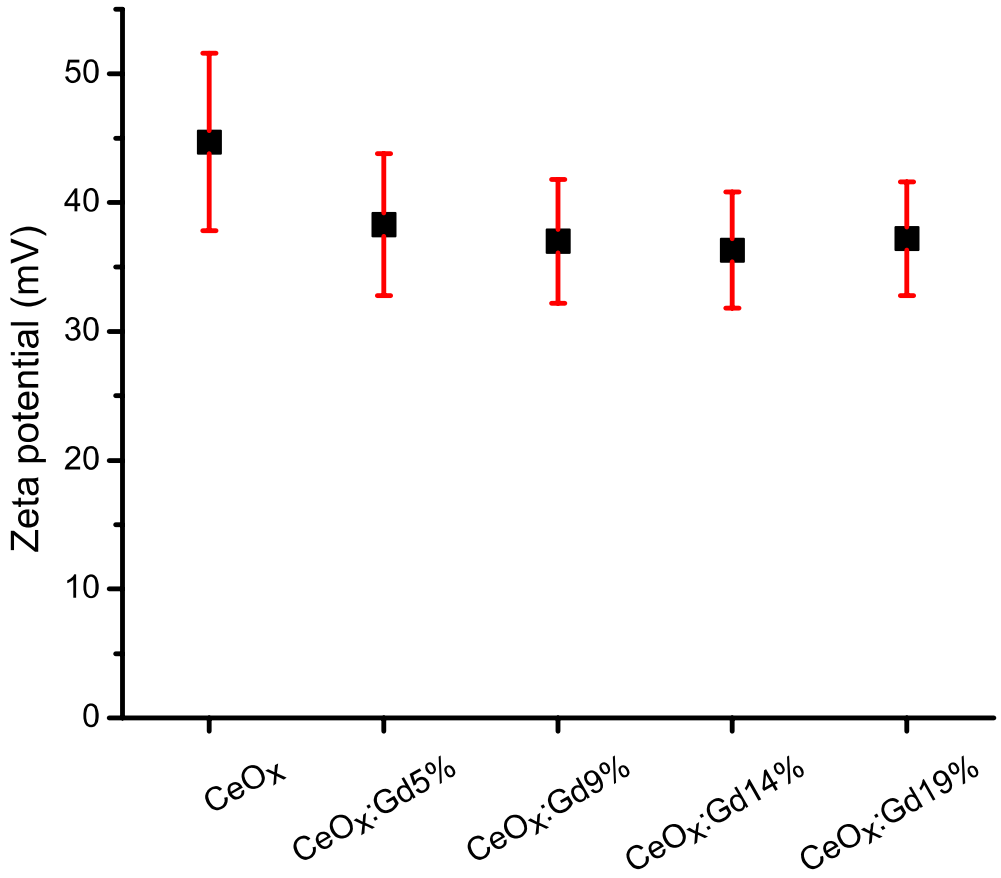

Figure S1. Measured Zeta potential of CeO_x:Gd0-19%

The number weighted hydrodynamic diameter was evaluated using dynamic light scattering (DLS), and the results are presented in Figure S2. DLS results indicate that all the Gd-CeNPs have a hydrodynamic diameter less than 7 nm. These diameters are reasonable comparing with the XRD data.

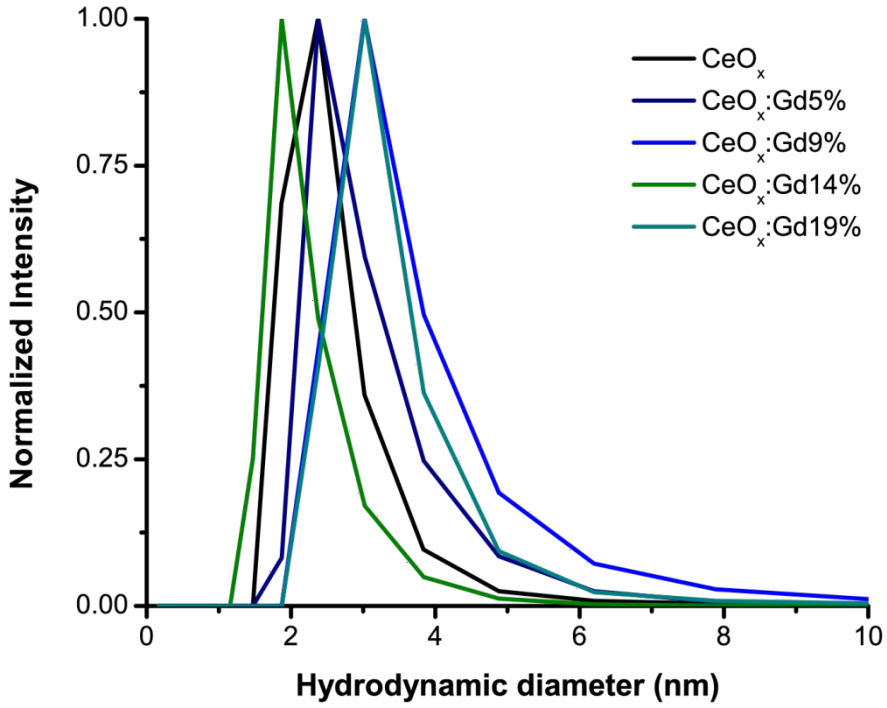

Figure S 2 Measured number weighted hydrodynamic diameters of CeO_x:Gd0-19%

UV-VIS Absorbance

The red-shift in absorbance for the different prepared Gd-CeNPs ([Ce] =50 µM) were estimated for different concentrations of H_2O_2 at optical density 0.05. An example is showed in Figure S3, where we have treated CeO_x with 1 µM H_2O_2 to $\Delta\lambda$ = 69.5 nm.

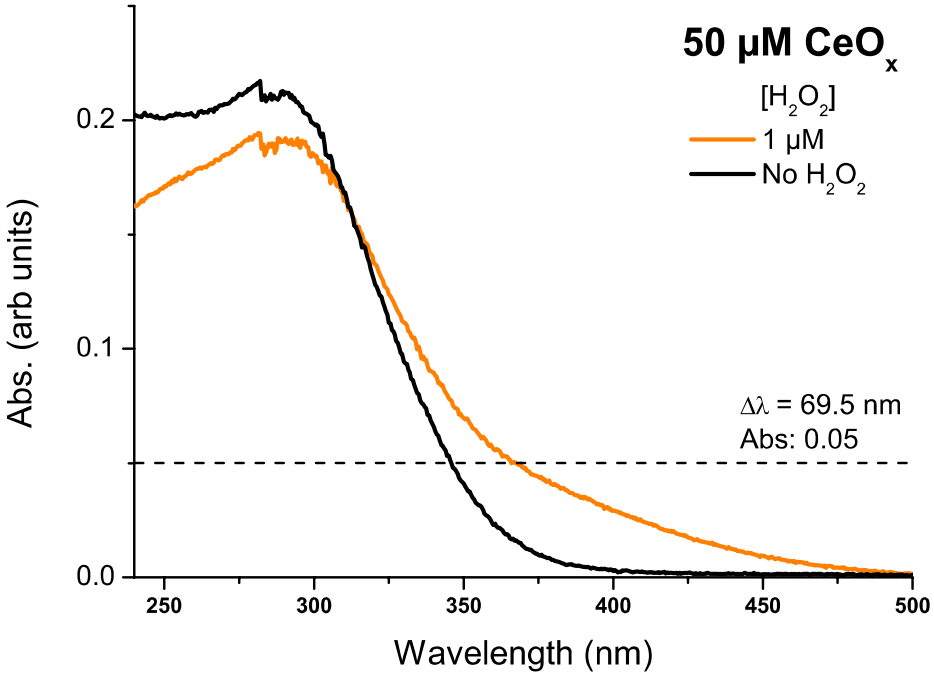

Figure S3 The red-shift ($\Delta\lambda$) was measured at the difference in wavelength at optical density 0.05 for sample, treated and untreated with H_2O_2. In this representative example, CeO_x was treated with 1 µM H_2O_2 had a $\Delta\lambda$ = 69.5 nm.

Three-level phantom model for MRI studies

The three-level phantom model that was used in magnetic resonance imaging (MRI) experiments is presented in Figure S4.

Figure S4. The three-level phantom model used in the MRI-experiments. Photograph courtesy of first author, P. Eriksson. Copyright 2020.