Supporting Information

Conservation of the Enzyme-like Activity and Biocompatibility of CeO_2 Nanozymes in Simulated Body Fluids (Saliva, Gastric, Intestinal, Lung)

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Figure S1. Additional TEM images and size distribution analysis.

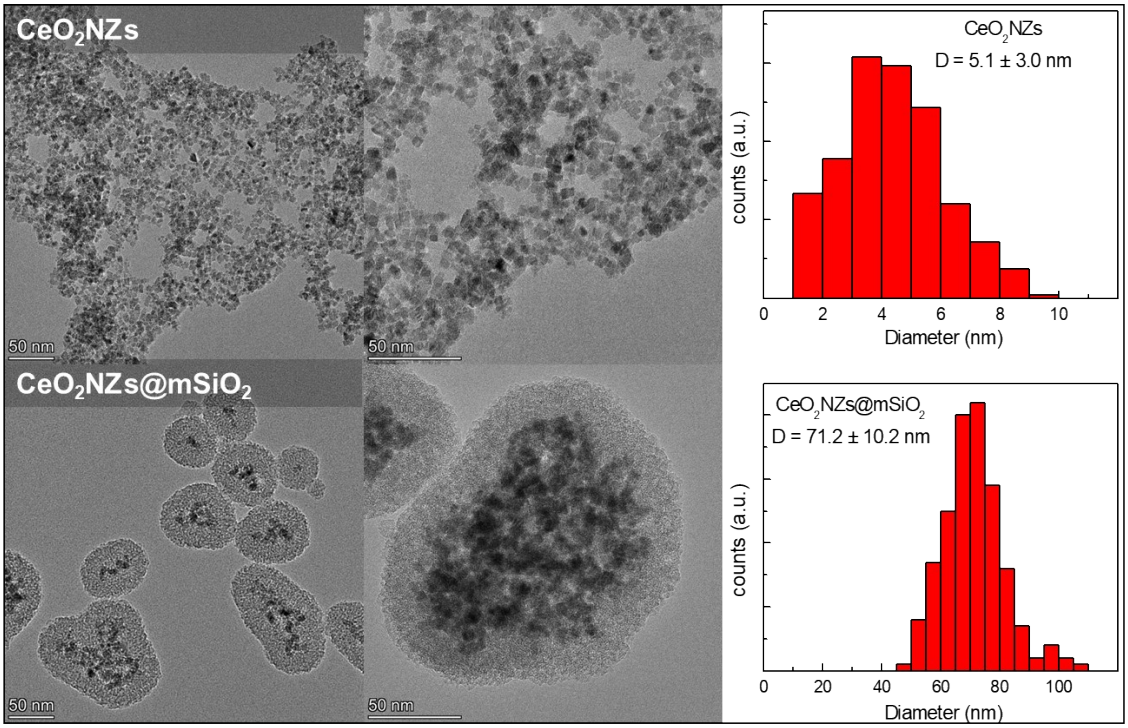

Figure S1. Additional TEM images at different magnifications and image analysis of the size distribution using Image J software (counting more than 500 particles) of the CeO_2NZs (upper row) and the CeO_2NZs@mSiO_2NPs (lower row).

Figure S2. TEM images of the evolution of CeO_2NZs in the different simulated body fluids and CCM.

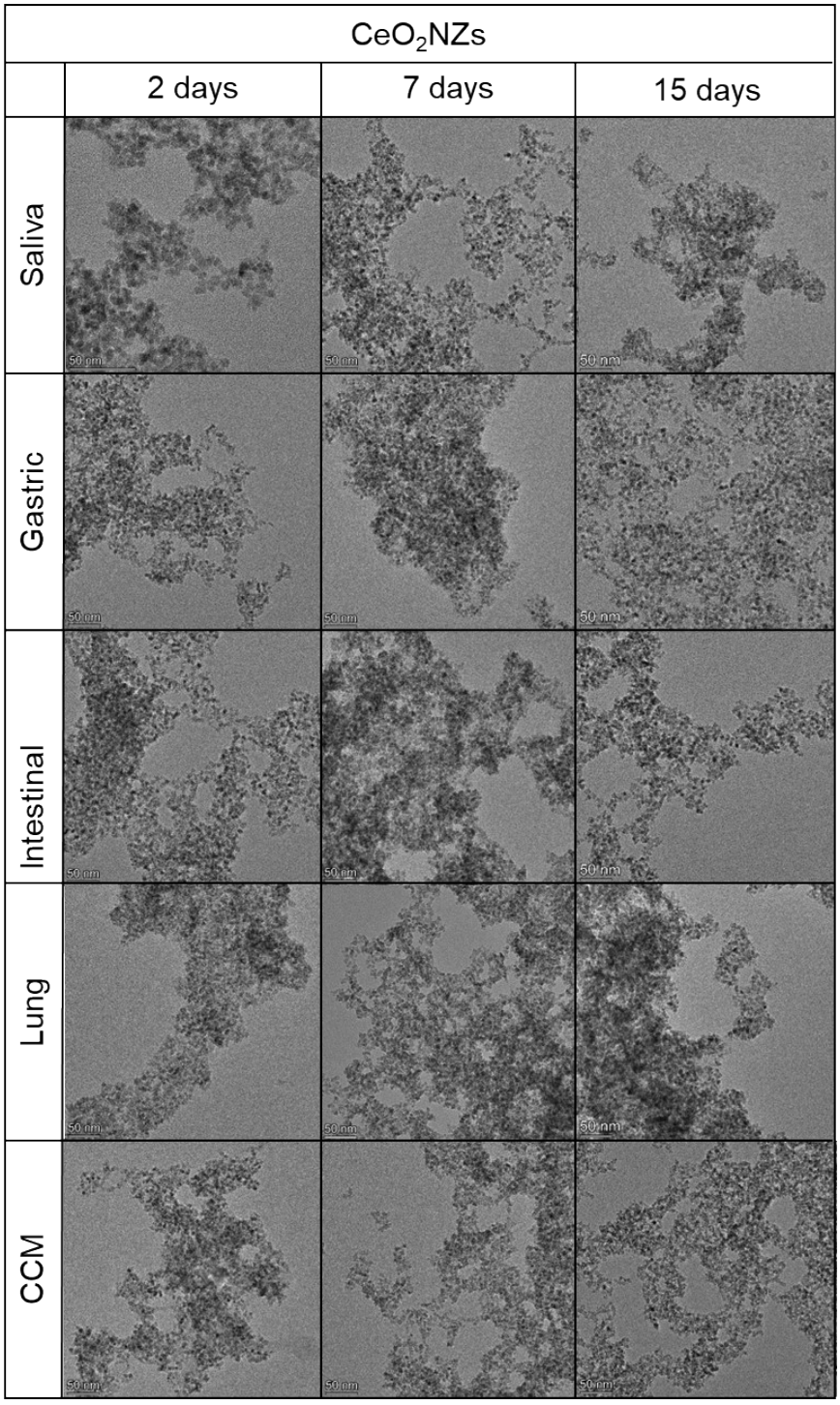

Figure S2. TEM images at different time points of CeO_2NZs dispersed in the simulated body fluids and CCM. As discussed in the paper, CeO_2NZs electrostatically stabilized (as is the case for similar metal oxide nanoparticles) agglomerate in the TEM grid during the drying process making difficult to observe modifications over time by this technique.

Figure S3. Study of the dissolution of the NZs in the different simulated body fluids and CCM by ICP-MS.

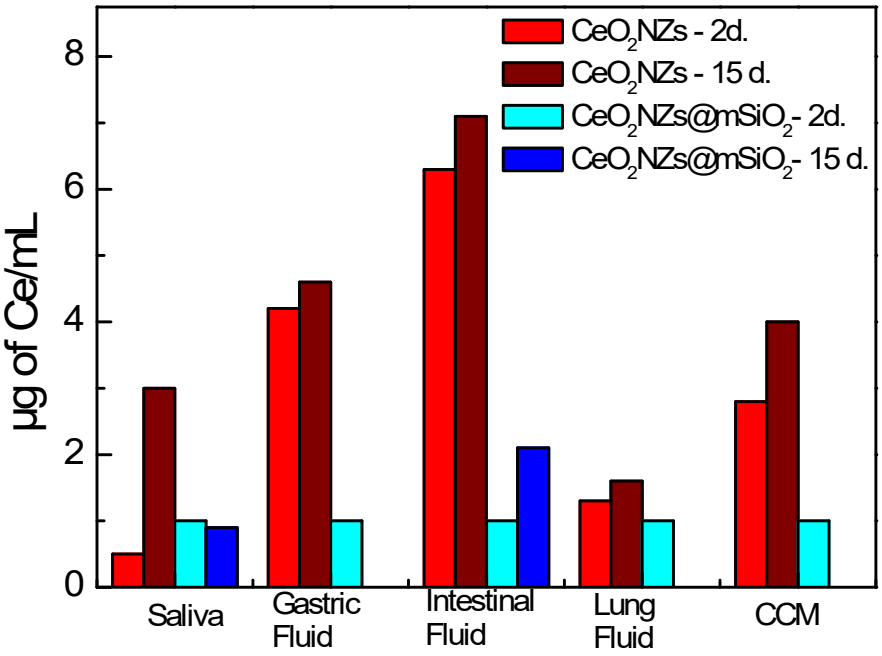

Figure S3. Concentration of Ce ions in the supernatants of the CeO_2NZs and CeO_2NZs@mSiO_2 after being exposed at 81.4 µg of Ce/ml (100 µg of CeO_2/ml) in the different body fluids and CCM for 2 and 15 days as determined by ICP-MS.

Figure S4. XPS analysis of the CeO_2NZs and CeO_2NZs@mSiO_2 incubated 7 days in the different physiological fluids and CCM.

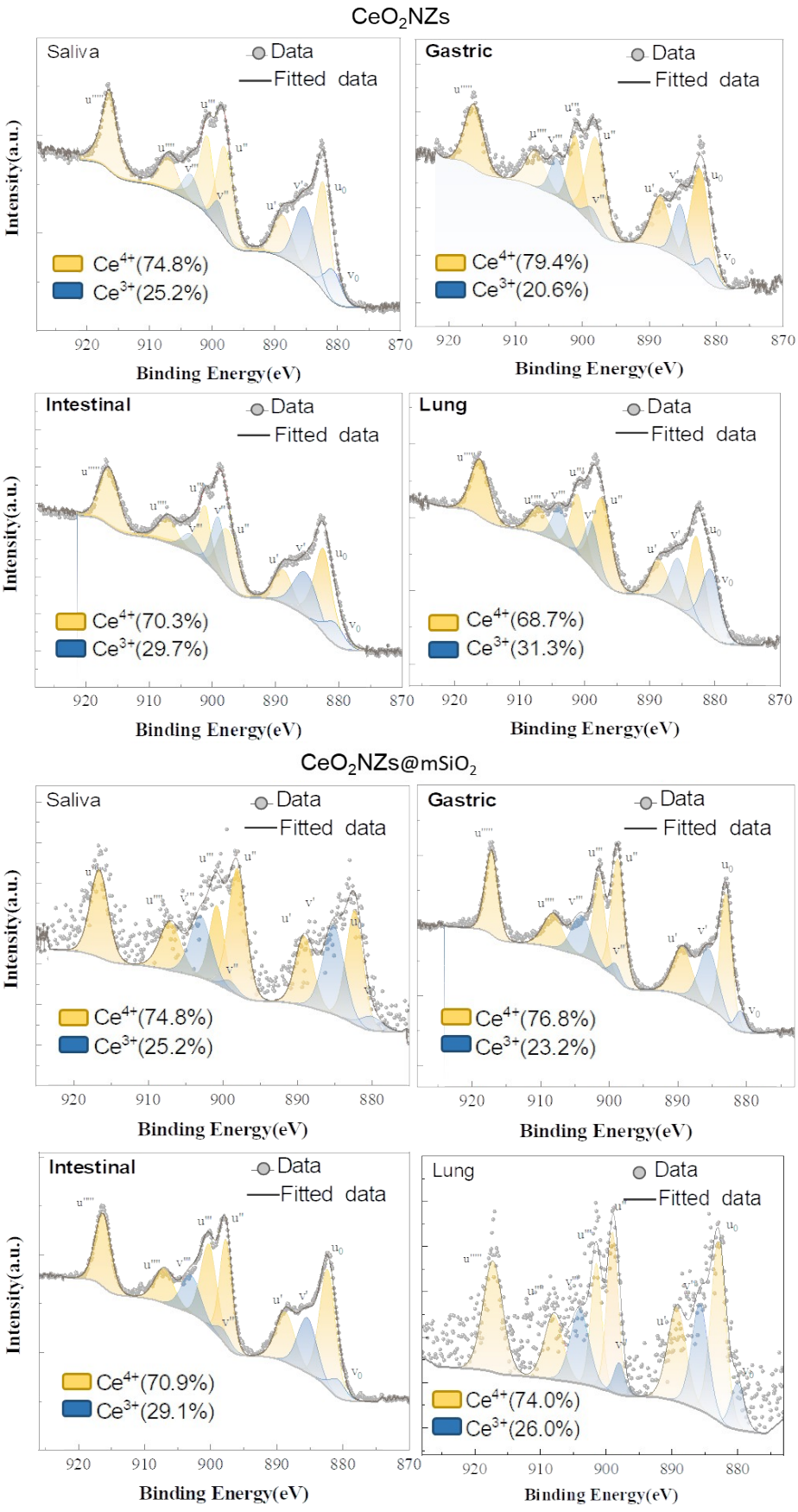

Figure S4. Ce 3d core-level spectra of CeO2NZs and CeO_2NZs@mSiO_2 after being exposed 7 days in the different body fluids and CCM, with peaks described as v0, v', v'', v''' (in blue) related to Ce^{3+} and peaks described as u0, u', u'', u''', u'''', u''''' (in yellow) to Ce^{4+} oxidation states. Percentage of Ce^{3+} and Ce^{4+} is calculated based on the non-linear least squares fitting.

Figure S5. Cell viability in human HepG2 cells incubated with the as-synthesized CeO_2NZs and CeO_2NZs@mSiO_2.

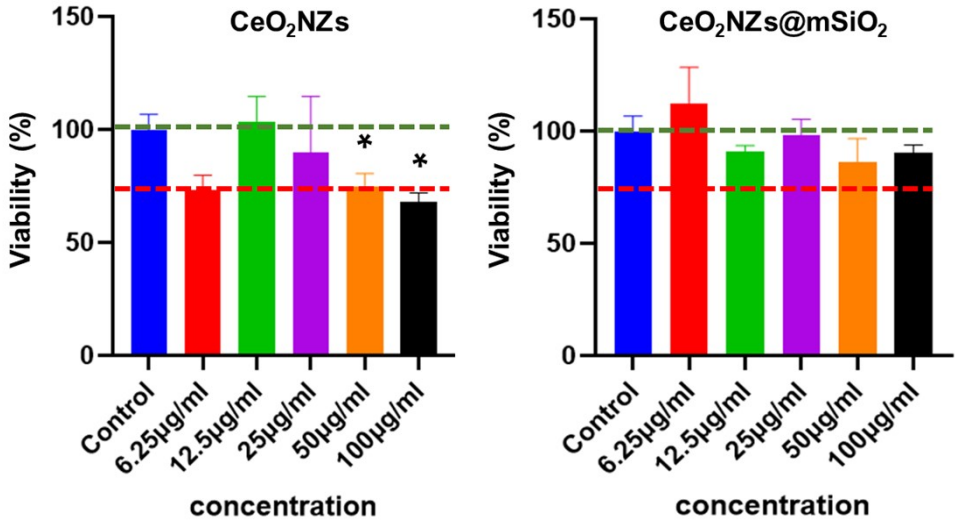

Figure S5. Cell viability in human HepG2 cell line of CeO_2NZs and CeO_2NZs@mSiO_2 as synthesized. Five different concentrations of CeO2NZs were tested in each set from left to right: 6.25, 12.5, 25, 50, and 100 µg of CeO2/mL. Green dashed lines indicate 100% control metabolic activity, while the red dashed lines indicate that the metabolic activity is decreased to 80%. The asterisk indicates data of significant difference vs control (100%) at $p < 0.05$.

Figure S6. Hydrodynamic diameter of NZs incubated up to 7 days with either Foetal Bovine Serum (FBS) or Human Serum (HS).

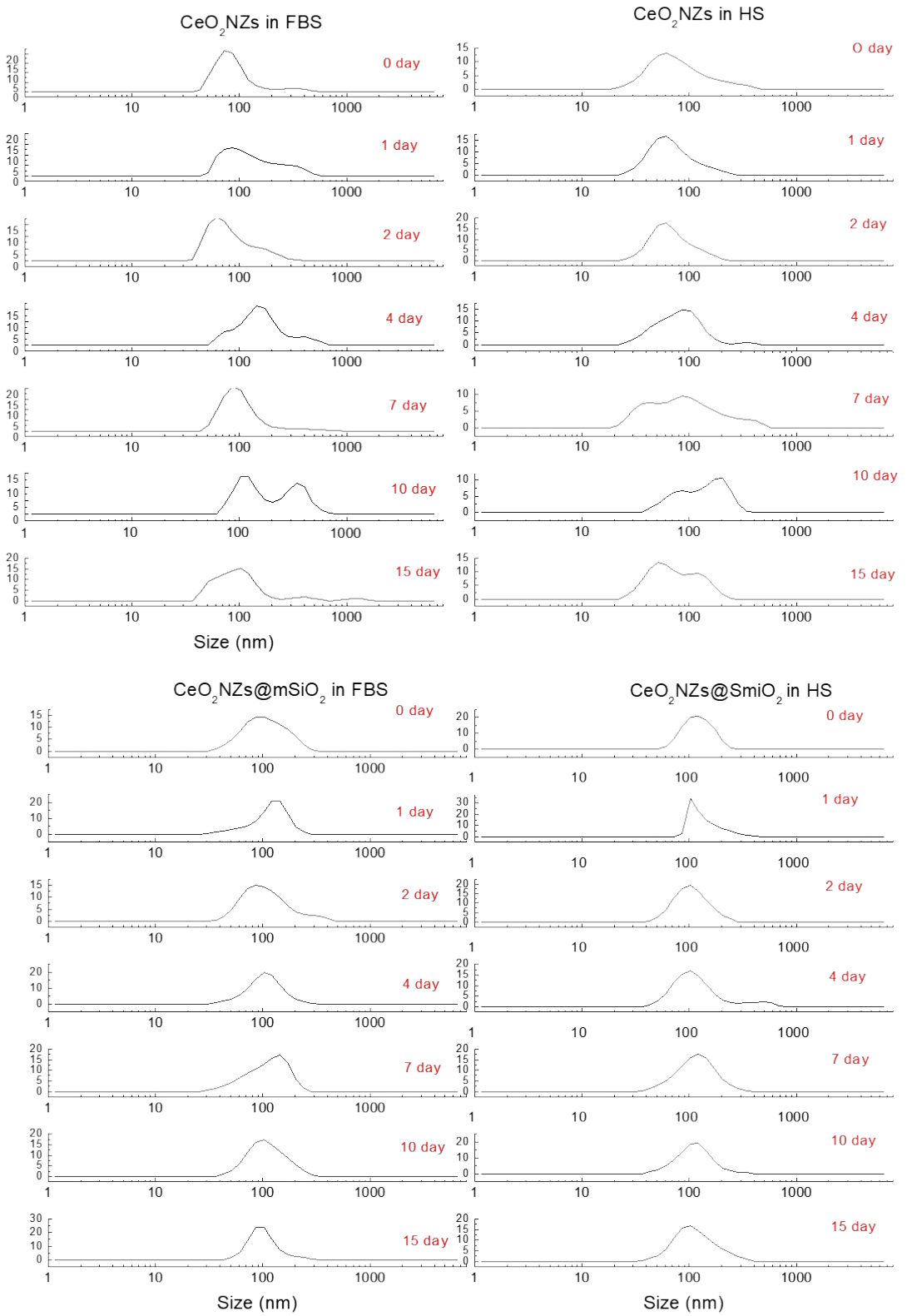

Figure S6. Hydrodynamic diameter of CeO_2NZs and CeO_2NZs@mSiO_2 dispersed in either FBS or HS at a final concentration of 50 µg of CeO_2/ml, which have been recovered and purified from the media at different time points. Day "0" indicates that the nanomaterials have been dispersed in the fluid for 30 minutes prior to their purification and measurements. Note that another set of experiments (not the one in the main manuscript) have been performed with FBS for this comparison.

Figure S7. UV-VIS spectra evolution of NZs incubated up to 7 days with either Foetal Bovine Serum (FBS) or Human Serum (HS)

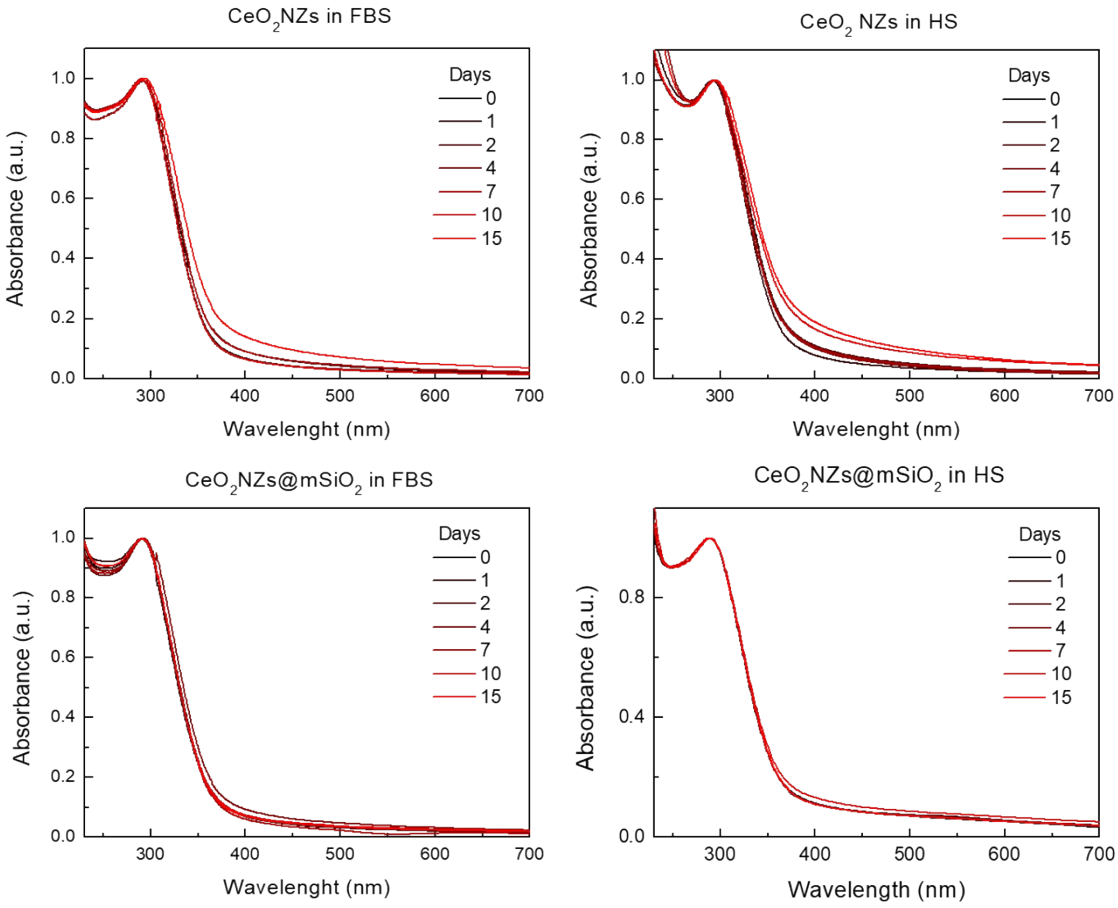

Figure S7. UV-VIS spectra of CeO_2NZs and CeO_2NZs@mSiO_2 dispersed in either FBS or HS at a final concentration of 50 µg of CeO_2/ml, which have been recovered and purified from the media at different time points. Day "0" indicates that the nanomaterials have been dispersed in the fluid for 30 minutes prior to their purification and measurements. Note that another set of experiments (not the one in the main manuscript) have been performed with FBS for this comparison.

Figure S8. Cell viability of NZs after being dispersed up to 7 days with either Foetal Bovine Serum (FBS) or Human Serum (HS)

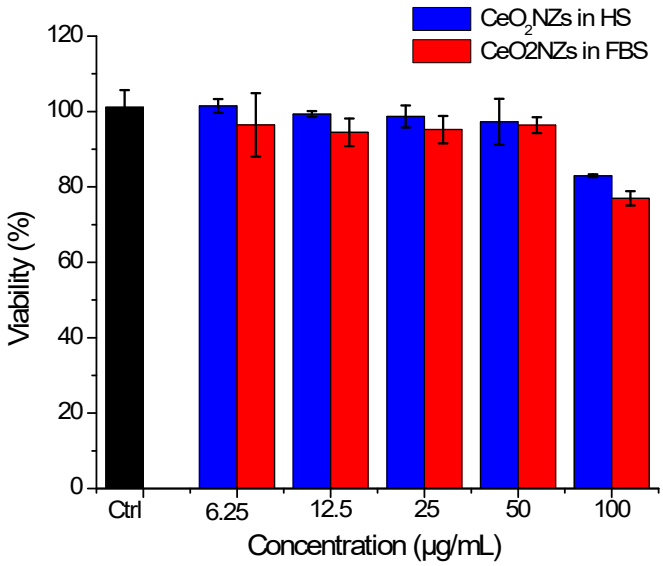

Figure S8. Cell viability in human hepatic cells (HepG2 cells) of CeO_2NZs and CeO_2NZs@mSiO_2 dispersed up to 7 days in either FBS or HS. Five different concentrations of both NZs were tested in each set from left to right: 6.25, 12.5, 25, 50, and 100 µg of CeO_2/mL.

Figure S9. UV-VIS spectra of the TMB oxidation test

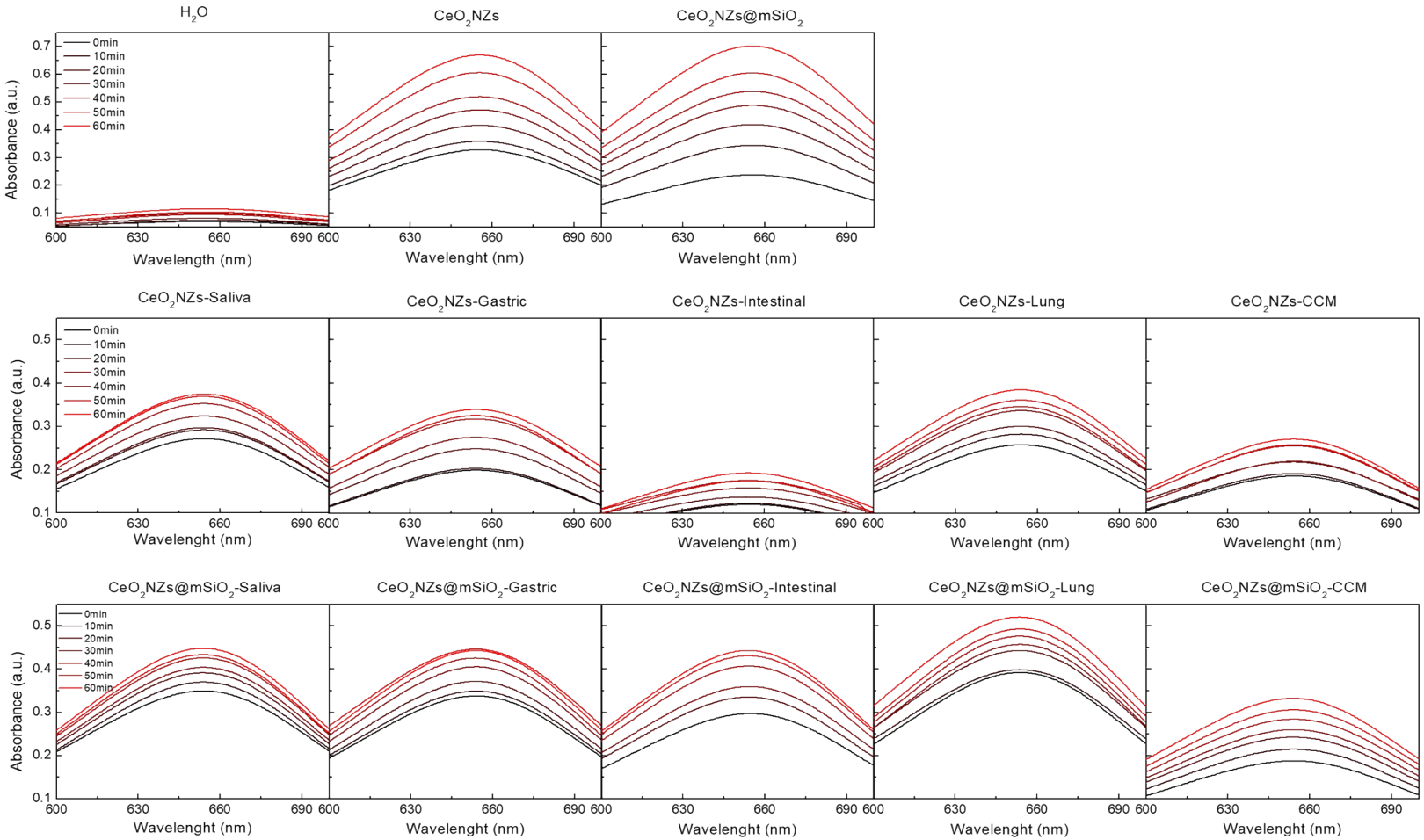

Figure S5. UV-VIS spectra of CeO_2NZs and CeO_2NZs@mSiO_2 as synthesized (upper row) and incubated in the simulated body fluids and CCM (lower rows) which correspond to the TMB oxidation test, Figure 7 of the main manuscript.

Table S1. Evolution of the Zeta Potential of the CeO_2NZs and CeO_2NZs@mSiO_2 exposed to the simulated body fluids and CCM during 15 days

Z-Potential（mv）									
		Control	0 days	1 days	2 days	4 days	7 days	10 days	15 days
CeO_2NZs	Saliva	-20.1	-19.3	-12.4	-12.0	-16.2	-12.5	-19.8	-13.8
	Gastric Fluid	-14.5	-13.6	-16.1	-14.8	- 14.4	-12.3	-12.2	-17.8
	Intestinal Fluid	-5.9	-4.9	-12.1	-5.1	-7.0	-9.4	-9.5	-20.2
	Lung Fluid	-16.0	-14.5	-19.8	-19.0	-18.3	-14.0	-14.9	-8.5
	CCM	-8.7	-11.2	-13.7	-16.6	-11.8	-15.1	-9.5	-17.3
CeO_2NZs@SiO_2	Saliva	-20.1	-10.2	-10.4	-13.5	13.2	10.3	13.2	11.3
	Gastric Fluid	-14.5	-10.4	-16.7	-16.8	-19.2	-14.6	-16.4	-16.1
	Intestinal Fluid	-5.9	-13.1	-13.5	-11.7	-11.1	-11.4	-12.4	-12.0
	Lung Fluid	-16.0	-12.6	-14.2	-11.0	-17.0	-13.5	-14.1	-13.4
	CCM	-8.7	-10.4	-10.4	-12.7	-10.0	-13.7	-15.5	-12.7