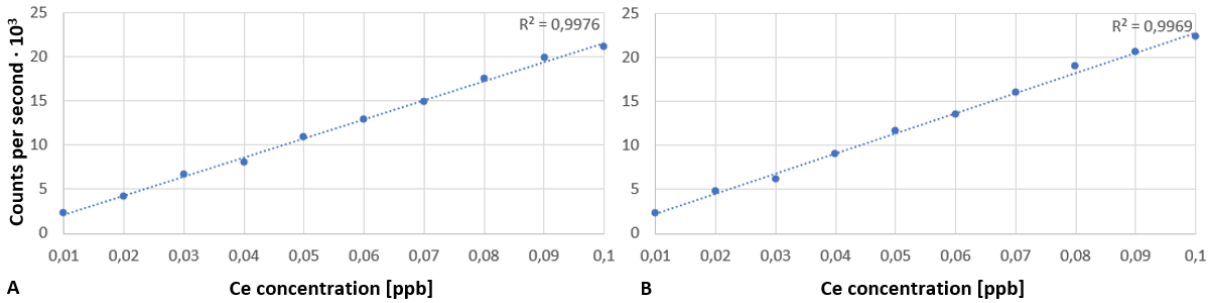
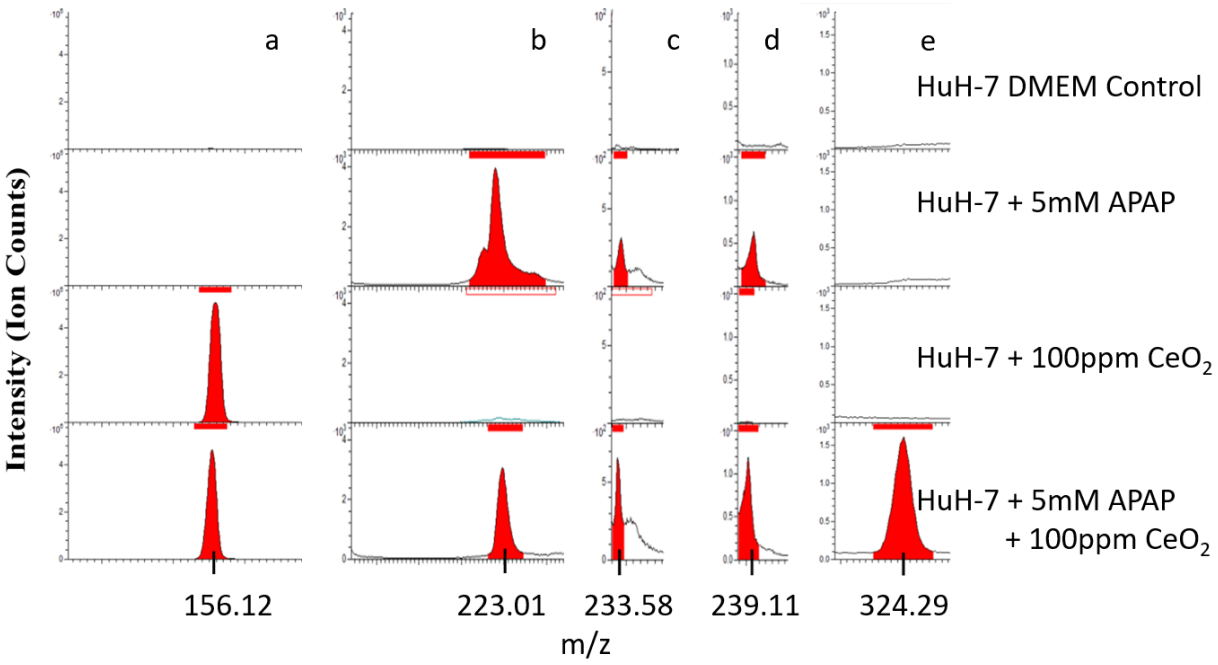
Electronic Supplementary Information

ESI 1: Constituents of different COMET assay buffers.

buffer	substance	Weight or volume
Lysis buffer (2 l)	NaCl Na_2EDTA TRIS H_2O NaOH DMSO TritonX	292.2 g (=2.5 mol l^{-1}) 74.4 g (=100 mmol l^{-1}) 2.4 g (=8.25 mmol l^{-1}) 1800 ml 15.5 g (=ca. 200 mmol l^{-1}) 200 ml (=10% (v/v)) 20 ml (=1% (v/v))
Electrophoresis buffer (20 l)	Na_2EDTA NaOH Na_2EDTA NaOH deionized H_2O	74.4g (=200 mmol l^{-1}) 400 g (=10 mol l^{-1}) 100 ml (=1 mmol l^{-1}) 600 ml (=300 mmol l^{-1}) 20 l
Neutralization buffer (2 l)	TRIS HCl37% H_2O HCl/NaOH	97.0 g (=400 mmol l^{-1}) 58 ml (=ca. 1%) 2 l For pH adjustement
TE-buffer	TRIS EDTA deionized H_2O VE HCl/NaOH	1.21 g (=10 mmol l^{-1}) 0.372 g (=1,3 mmol l^{-1}) 1 l For pH adjustement



ESI 2: Calibration curves of the concentration of ionic Ce standard in the range 0.01-0.1 ppb. (A) 0.5 mmol APAP in DMEM; (B) 50 mmol/l in DMEM.



ESI 3: ToF-SIMS mass spectrum (positive ion mode), showing the CeO_2 peak (a, m/z 156.12), the APAP-FeO(OH) peak (b, m/z 223.01), the APAP-$Zn(OH)_2$ peak (c, m/z 233.58) APAP-$MnO(OH)_2$ peak (d, m/z 239.11) and the APAP-CeO(OH) peak (e, m/z 324.29) in red color in HuH-7 liver cells. The first row of spectra show unexposed HuH-7 cells, the second row of spectra show HuH-7 liver cells exposed for 24h with 5 mM APAP, the third row of spectra show HuH-7 liver cells exposed for 24h to 100ppm CeO_2 NPs, the fourth row of spectra show HuH-7 liver cells co-exposed for 24h to 5mM APAP and 100ppm CeO_2 NPs. The x-axis displays the molecular weight; the y-axis corresponds to the ion intensities for the peaks.