

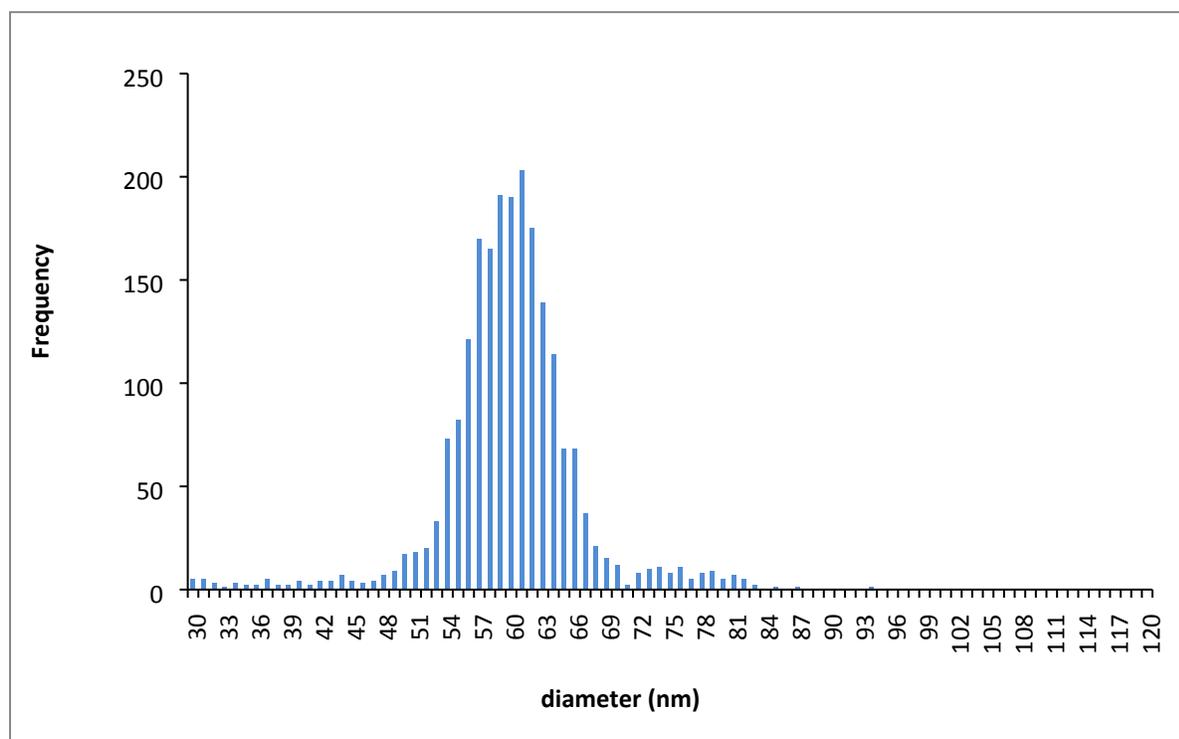
Electronic Supplementary Information (ESI)

Investigation of cloud point extraction for the analysis of metal nanoparticles in a soil matrix

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Figure S1: Single particle inductively coupled plasma spectrometry (spICP-MS) derived size distribution of native citrate-stabilized BBI AuNPs¹ with a nominal size of 60 nm (BBI60).



¹ The identification of any commercial product or trade name does not imply endorsement or recommendation by the National Institute of Standards and Technology.

Figure S2: Representative example of the mass distribution for a BBI60 AuNP sample extracted with TX-114 + CaCl₂ as determined by spICP-MS

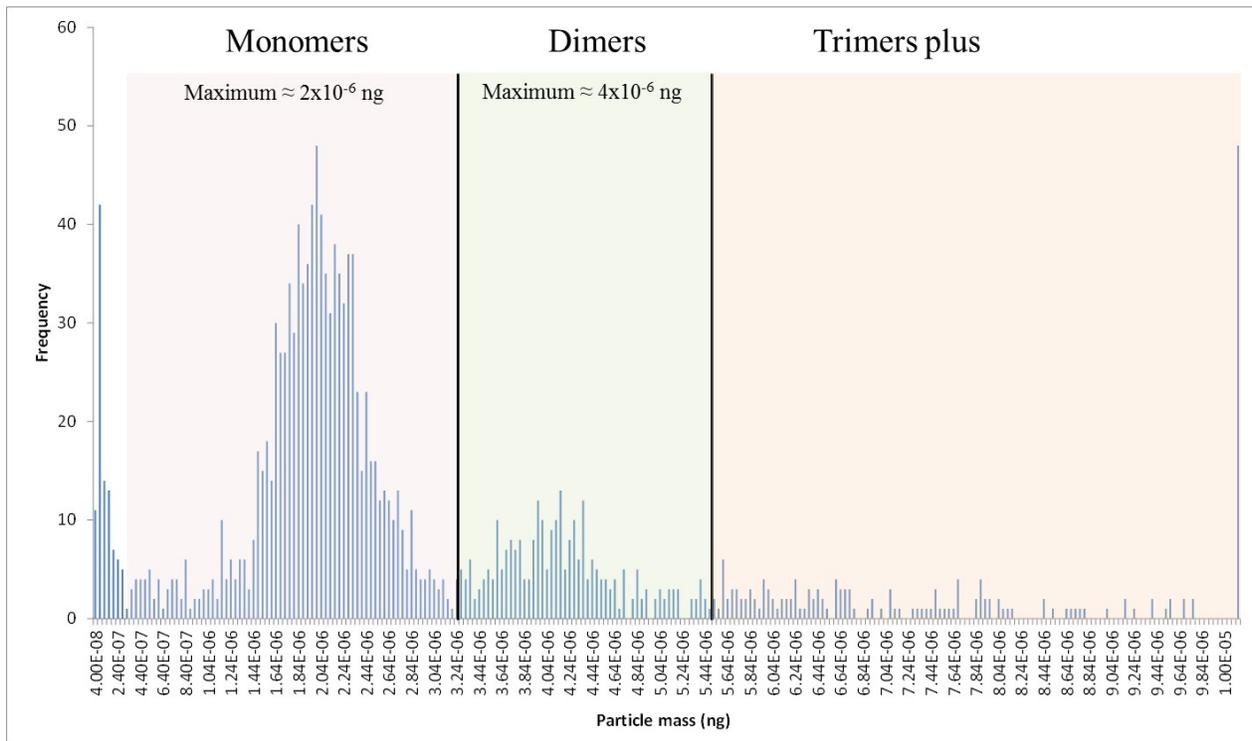


Figure S3: Cloud point extraction (CPE) recovery as a function of nominal AuNP diameter (BBI10, BBI30 and BBI60) using a) TX-114 alone and b) TX-114 + NaCl as determined after digestion of the extract with aqua regia (AR) and analysis by ICP-MS. The uncertainties represent one standard deviation of 3 to 10 replicates.

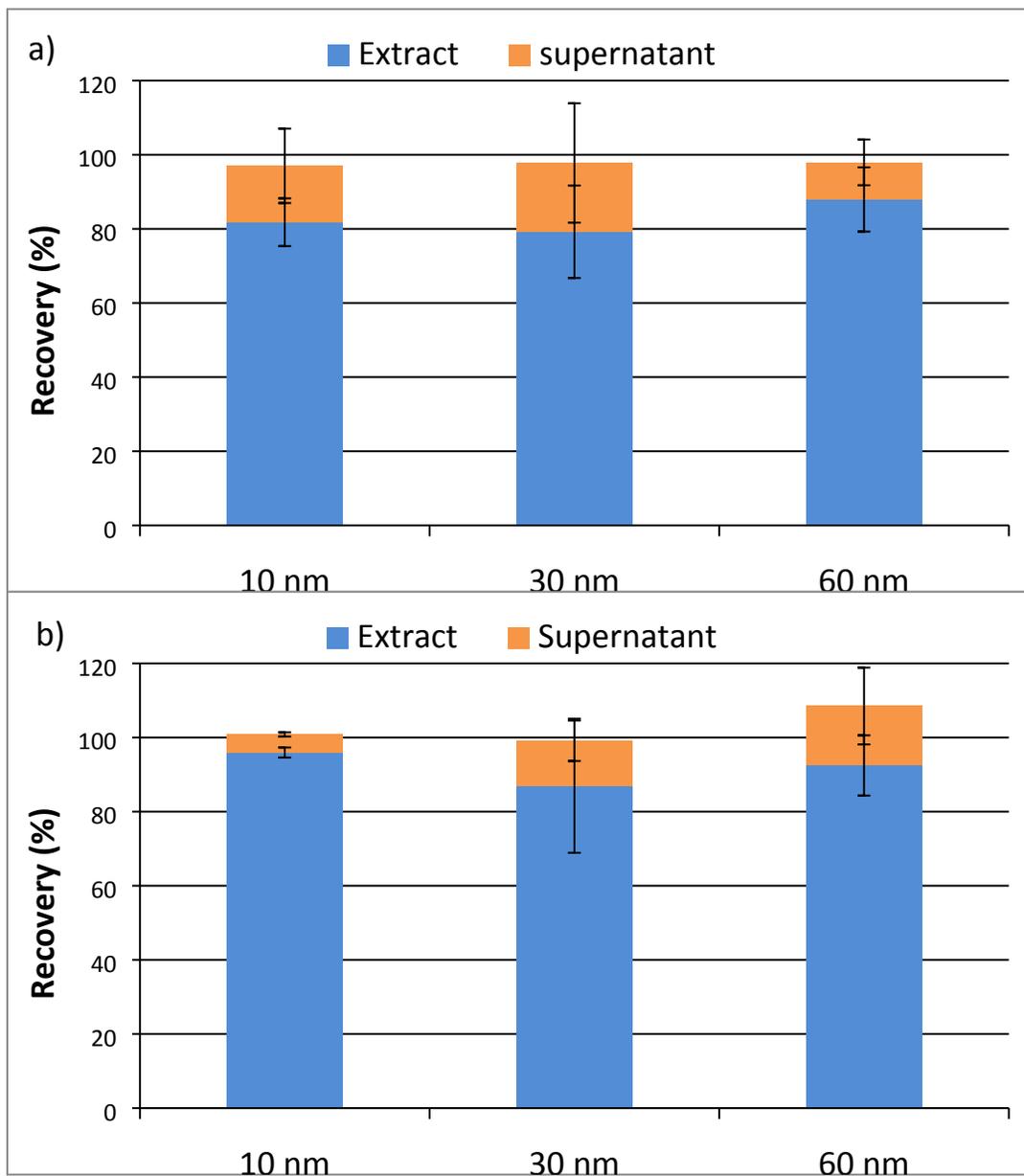


Figure S4: spICP-MS size distributions for BBI30 AuNPs with different surface coatings after CPE using TX-114 alone, with NaCl, CA or EDTA

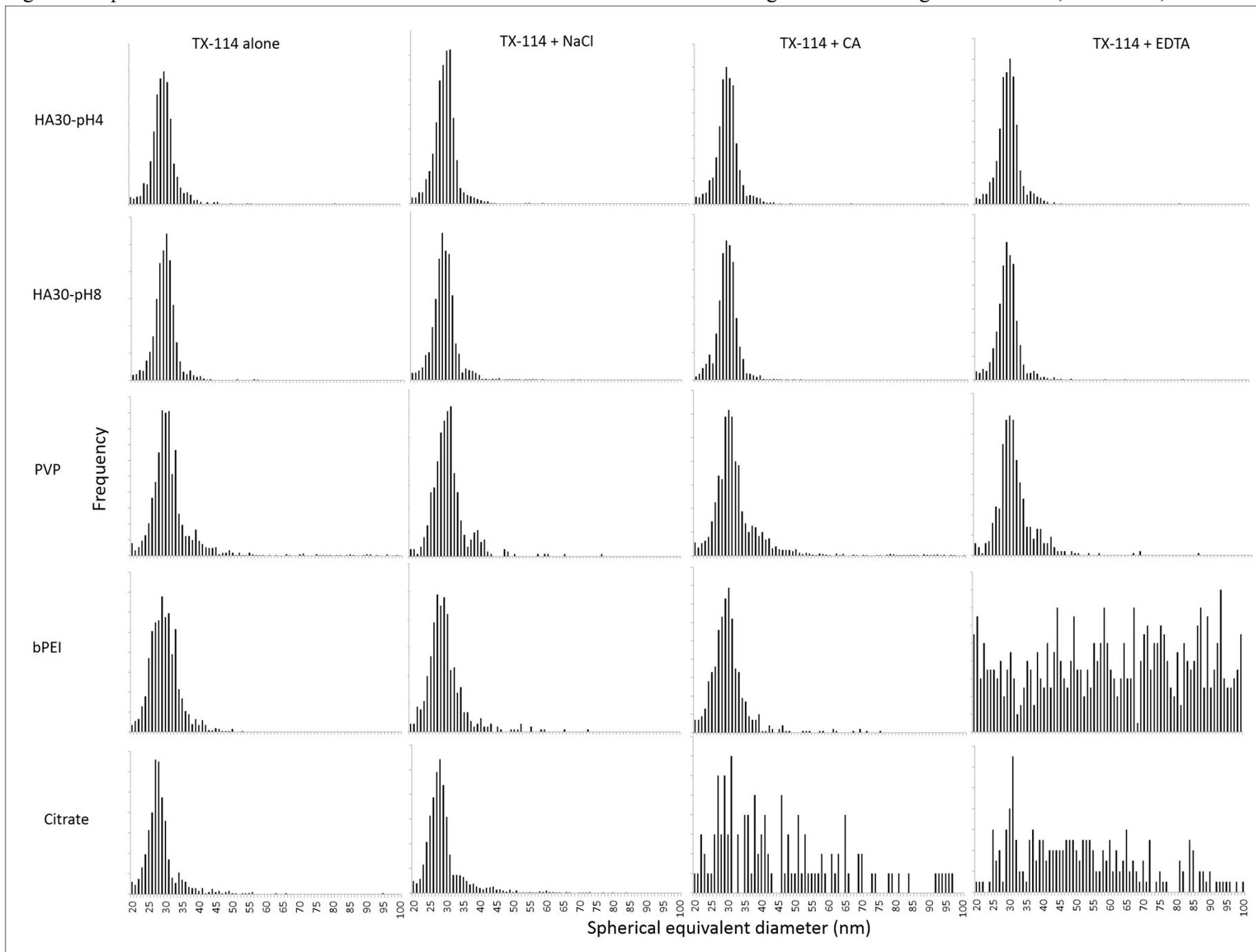


Figure S5: Visual observation of the extraction of HA-treated AuNPs (nominal size of 30 nm, BBI30) as a function of the additive during CPE using TX-114 as a surfactant

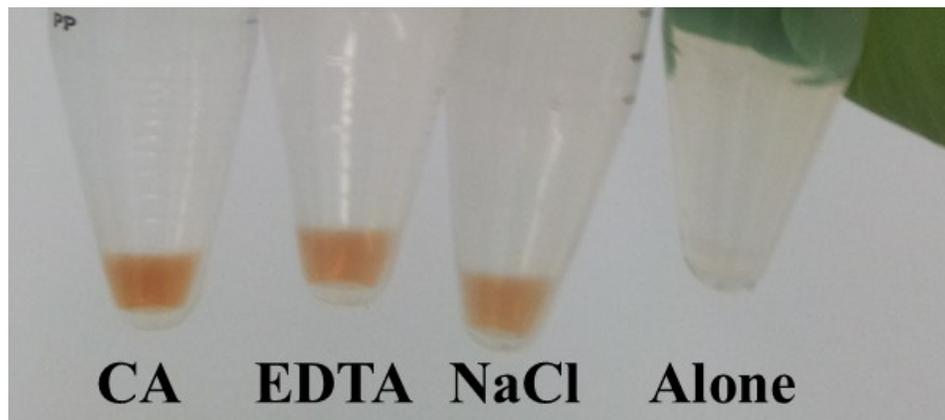


Figure S6: Fractograms (MALS signal at 90° scattering angle) for BBI60 using SDS in the mobile phase (0.1 mmol L⁻¹ SDS + 0.4 mmol L⁻¹ NH₄NO₃); replicate fractograms shown.

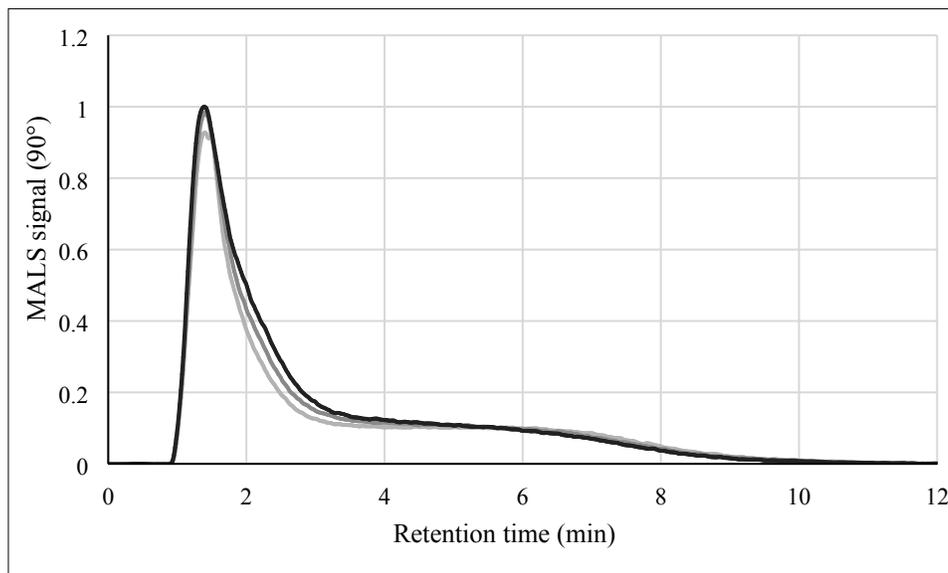


Figure S7: Fractograms of AuNP replicates with a nominal size of a) BBI30 and b) BBI60.

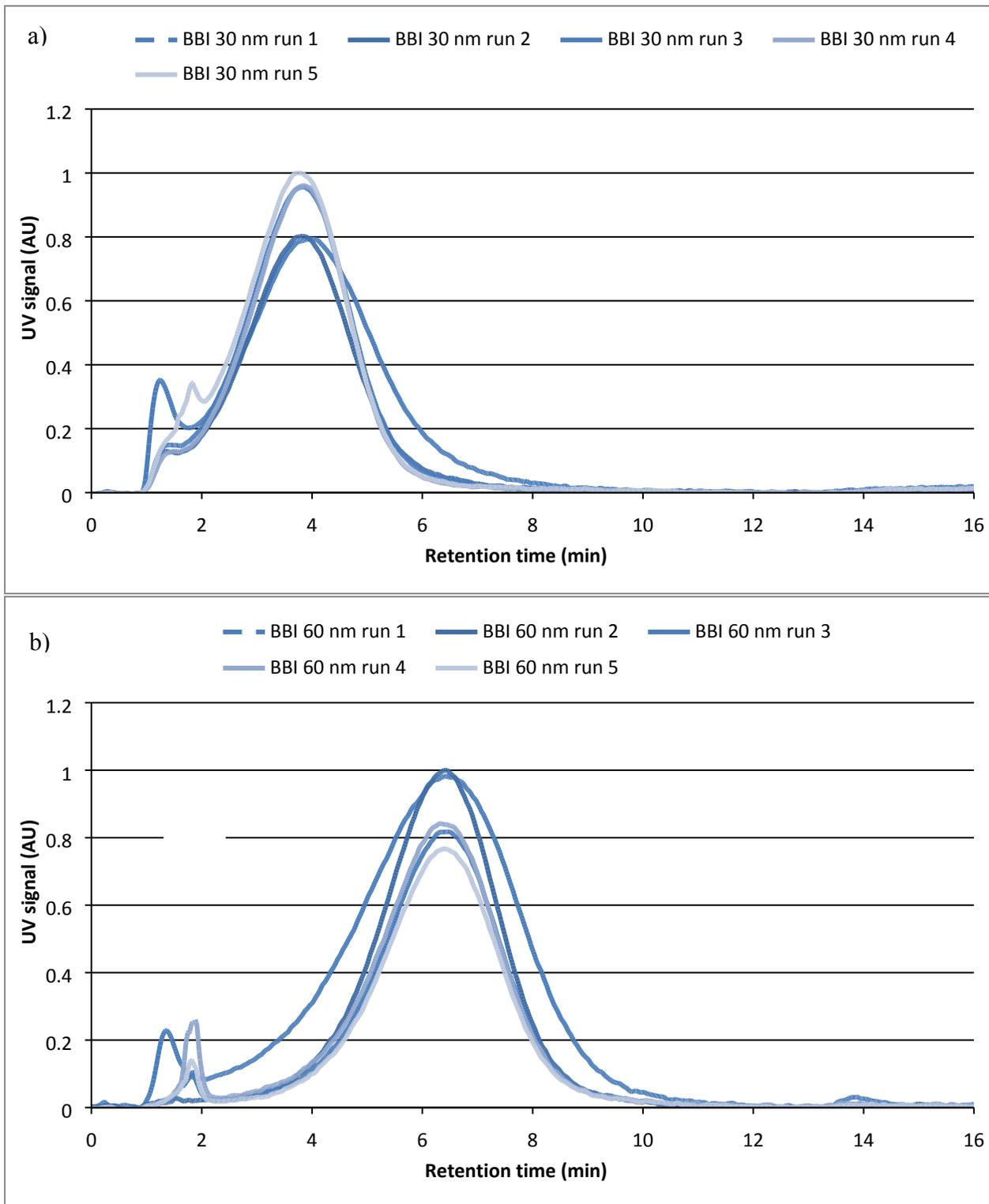


Figure S8: a) Fractograms of BBI60 with TX-114 at 13 ng kg⁻¹ (blue) and 0.2 ng kg⁻¹ (red), each signal is scaled against its own magnitude with MALS signal recorded at an angle of 90°, b) ICP-MS signal of BBI60 with TX-114 at 0.2 ng kg⁻¹.

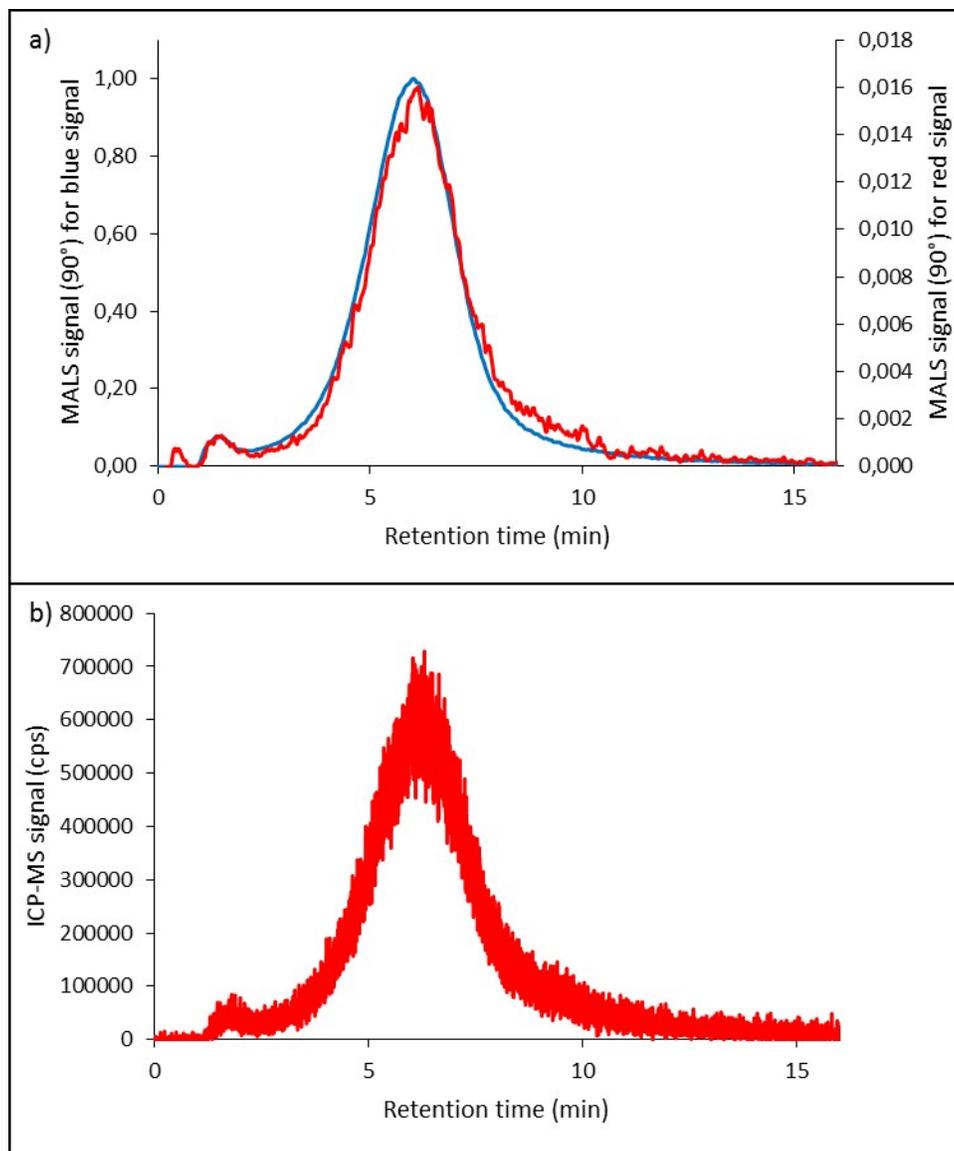


Figure S9: spICP-MS derived size distribution for BBI60 AuNPs after CPE with an initial concentration of a) $10 \mu\text{g L}^{-1}$ and b) $100 \mu\text{g L}^{-1}$

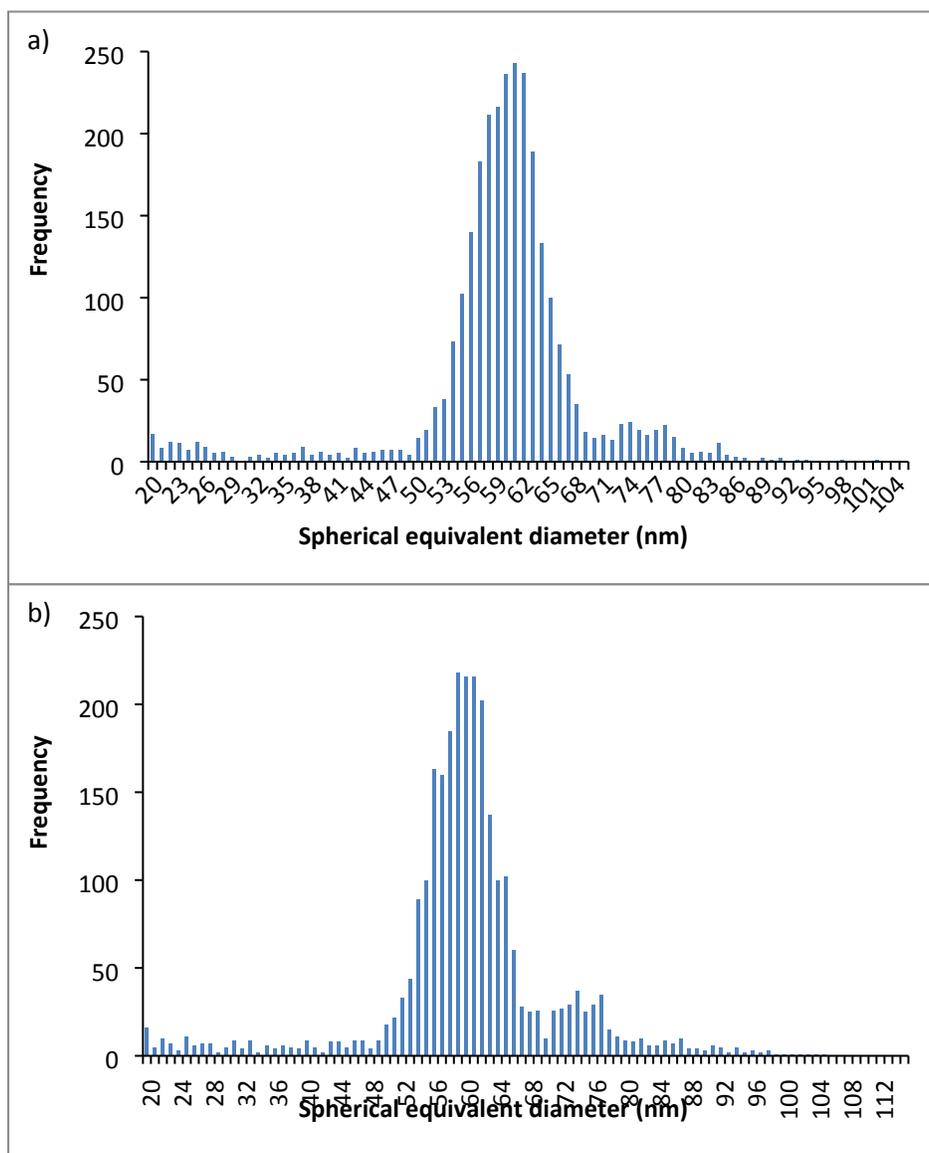


Figure S10: Expansion of ^{197}Au signal from BBI60 measured by ICP-MS (see Figure 11 in main text)

