Electronic Supplementary Material (ESI) for JAAS.

Supporting information

Table S1. Physicochemical properties of the different solvents used along the study. (Data from D.R. Lide, *CRC Handbook of Chemistry and Physics*, CRC Press/Taylor and Francis, Boca Raton, Florida, 2006)

Solvent	Surface tension[a] (mN m^{-1})	Viscosity[b] (mPa·s)	Vapor pressure[b] (kPa)	Density[b] (g mL^{-1})
Water	72.0	1.002	2.303	0.998
Glycerol 6% (w w^{-1})	71.1	1.157	2.303	1.012
Ethanol 10% (w w^{-1})	47.5	1.501	2.648	0.980

[a] 25°C; [b] 20°C

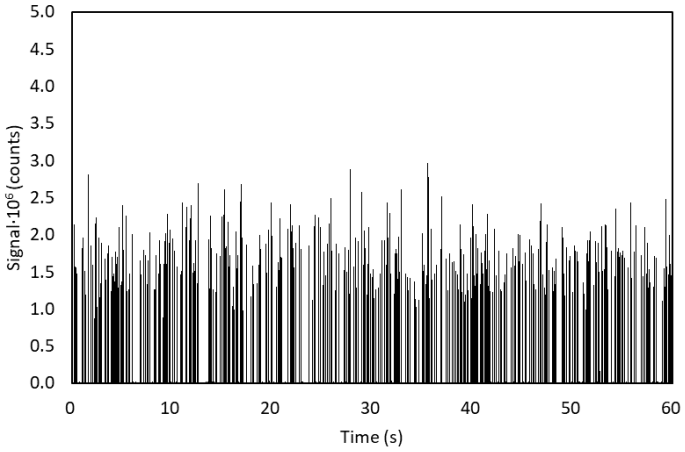
Table S2. Nanoparticle mean diameter operating organic matrices with and without internal standardization. Calibration: water standards. Instrument: Agilent 8900. AuNPs and PtNPs operating conditions: Q_g 0.9 L min^{-1}; SD 8 mm. SeNPs operating conditions: Q_g 0.9 L min^{-1}; SD 4 mm.

	Mean diameter (nm)										
Matrix	**6% w w^{-1} glycerol**					**10% w w^{-1} ethanol**					
NP element	**Pt**	**Se**		**Au**		**Pt**	**Se**		**Au**		
Nominal size (nm)	**70**	**150**		**50**	**100**	**150**	**70**	**150**		**50**	**100**	**150**
Sample											
Reference	71 ± 4	154 ± 12		52 ± 6	102 ± 8	155 ± 12	71 ± 4	154 ± 12		52 ± 6	102 ± 8	155 ± 12
No IS	74 ± 3	156 ± 6		52 ± 2	116 ± 5	165 ± 7	47 ± 2	107 ± 4		49 ± 2	77 ± 4	131 ± 5
IS_{ion} correction (IS_{ion})	70 ± 2 (Ir)	150 ± 6 (As)	160 ± 5 (Te)	53 ± 2 (Ir)	106 ± 4 (Ir)	155 ± 6 (Ir)	61 ± 3 (Ir)	129 ± 5 (As)	134 ± 5 (Te)	43 ± 2 (Ir)	105 ± 4 (Ir)	157 ± 6 (Ir)
IS_{trans} correction (IS_{trans})	74 ± 3 (AuNPs)	156 ± 6 (PtNPs)		52 ± 2 (PtNPs)	116 ± 5 (PtNPs)	165 ± 7 (PtNPs)	53 ± 2 (AuNPs)	129 ± 3 (PtNPs)		40 ± 2 (PtNPs)	84 ± 3 (PtNPs)	138 ± 4 (PtNPs)
IS_{ion} + IS_{trans} correction (IS_{ion}/IS_{trans})	70 ± 3 (Ir/AuNPs)	150 ± 4 (As/PtNPs)	160 ± 6 (Te/PtNPs)	53 ± 2 (Ir/PtNPs)	106 ± 4 (Ir/PtNPs)	155 ± 6 (Ir/PtNPs)	70 ± 3 (Ir/AuNPs)	148 ± 6 (As/PtNPs)	154 ± 6 (Te/PtNPs)	49 ± 2 (Ir/PtNPs)	100 ± 5 (Ir/PtNPs)	150 ± 7 (Ir/PtNPs)

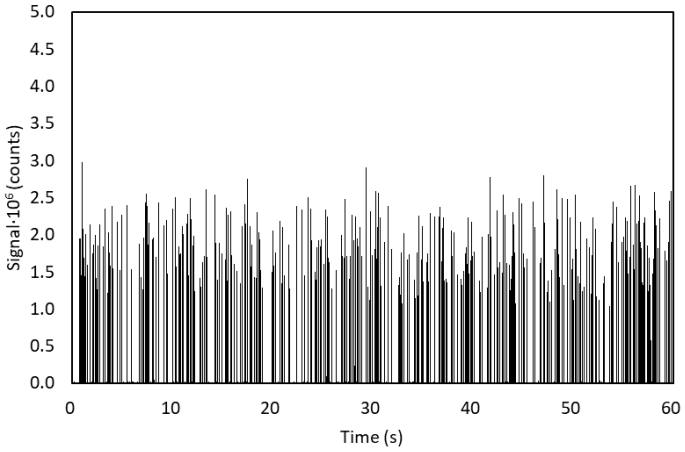
Table S3. Nanoparticle number concentration operating organic matrices with and without internal standardization. Calibration: water standards. Instrument: Agilent 8900. AuNPs and PtNPs operating conditions: Q_g 0.9 L min^{-1}; SD 8 mm. SeNPs operating conditions: Q_g 0.9 L min^{-1}; SD 4 mm.

	Concentration (10^4 mL^{-1})									
Matrix	**6% w w^{-1} glycerol**					**10% w w^{-1} ethanol**				
NP element	**Pt**	**Se**	**Au**			**Pt**	**Se**	**Au**		
Nominal size (nm)	**70**	**150**	**50**	**100**	**150**	**70**	**150**	**50**	**100**	**150**
Sample										
Reference	1.3 ± 0.2	2.0 ± 0.2	2.5 ± 0.3	3.5 ± 0.4	2.1 ± 0.2	1.3 ± 0.2	2.0 ± 0.2	2.5 ± 0.3	3.5 ± 0.4	2.1 ± 0.2
No IS	1.2 ± 0.2	1.7 ± 0.4	2.3 ± 0.3	3.3 ± 0.3	2.0 ± 0.2	1.8 ± 0.2	2.8 ± 0.2	3.4 ± 0.6	4.7 ± 0.4	2.8 ± 0.2
IS_{trans} correction (IS_{trans})	1.2 ± 0.2 (AuNPs)	1.7 ± 0.4 (PtNPs)	2.3 ± 0.3 (PtNPs)	3.3 ± 0.3 (PtNPs)	2.0 ± 0.2 (PtNPs)	1.2 ± 0.2 (AuNPs)	1.9 ± 0.2 (PtNPs)	2.6 ± 0.3 (PtNPs)	3.3 ± 0.3 (PtNPs)	2.1 ± 0.3 (PtNPs)

A



B



C

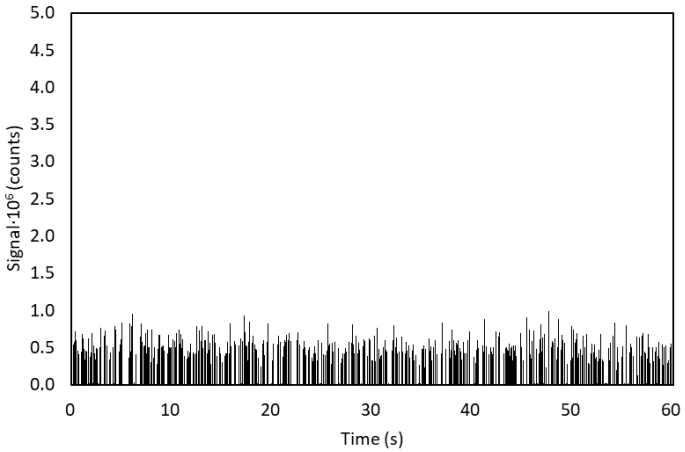


Figure S1. $^{195}Pt^{+}$ time scan for 70 nm PtNPs suspension in (A) water, (B) 6% w w^{-1} glycerol and (C) 10% w w^{-1} ethanol. Sampling depth position: 8 mm. Number concentration of PtNPs: $1.3 \cdot 10^{4}$ mL^{-1}. Instrument: Agilent 8900 ICP-MS.

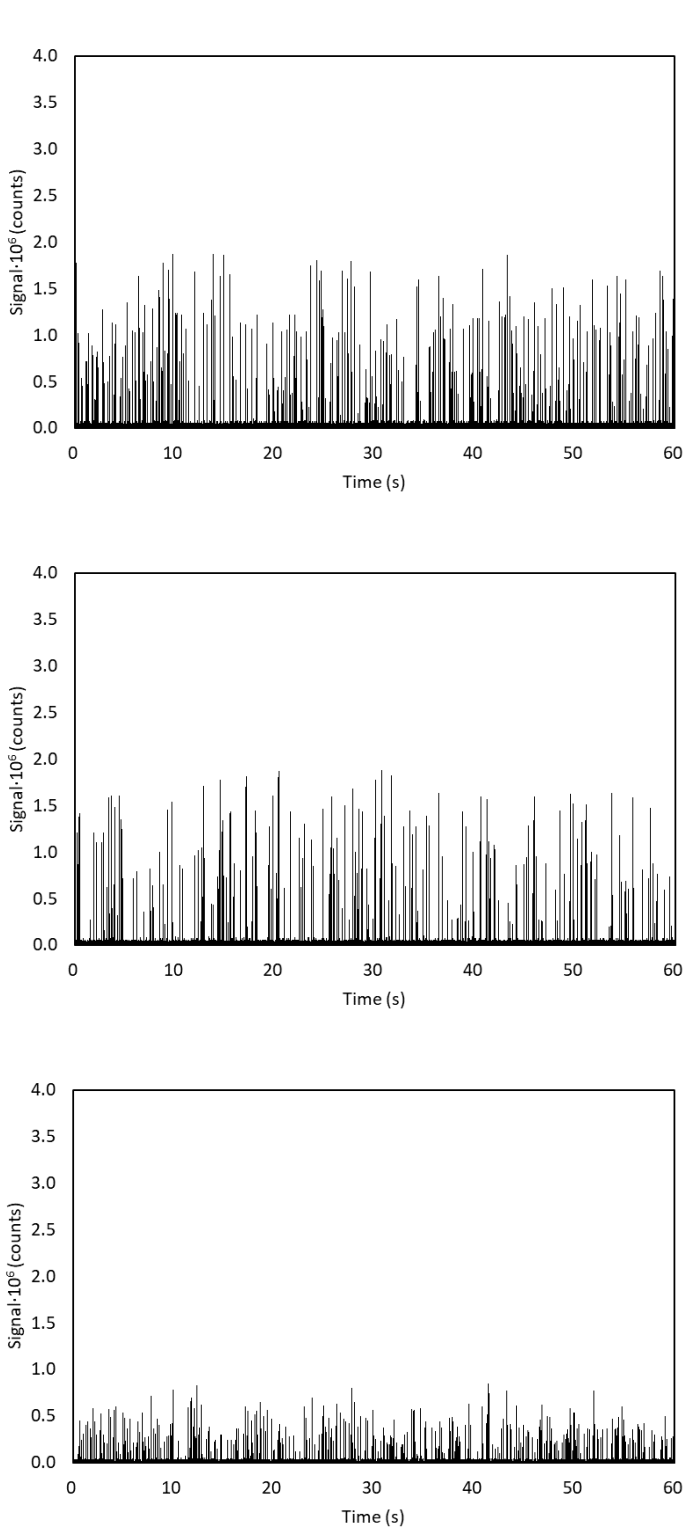


Figure S2. $^{78}Se^{+}$ time scan for 150 nm SeNPs suspension in (A) water, (B) 6% w w^{-1} glycerol and (C) 10% w w^{-1} ethanol. Sampling depth position: 4 mm. Number concentration of SeNPs: $2.0 \cdot 10^{4}$ mL^{-1}. Instrument: Agilent 8900 ICP-MS.

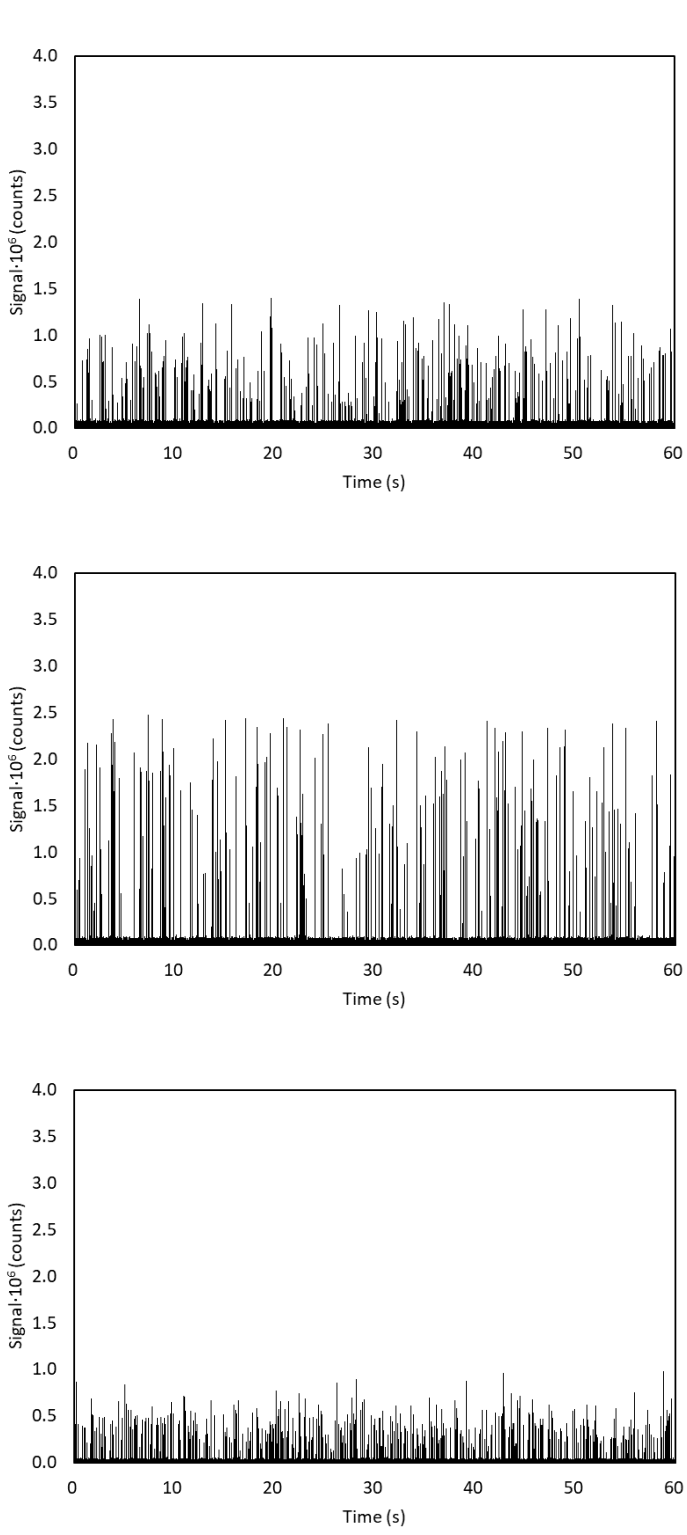


Figure S3. $^{78}Se^{+}$ time scan for 150 nm SeNPs suspension in (A) water, (B) 6% w w^{-1} glycerol and (C) 10% w w^{-1} ethanol. Sampling depth position: 8 mm. Number concentration of SeNPs: $2.0 \cdot 10^{4}$ mL^{-1}. Instrument: Agilent 8900 ICP-MS.

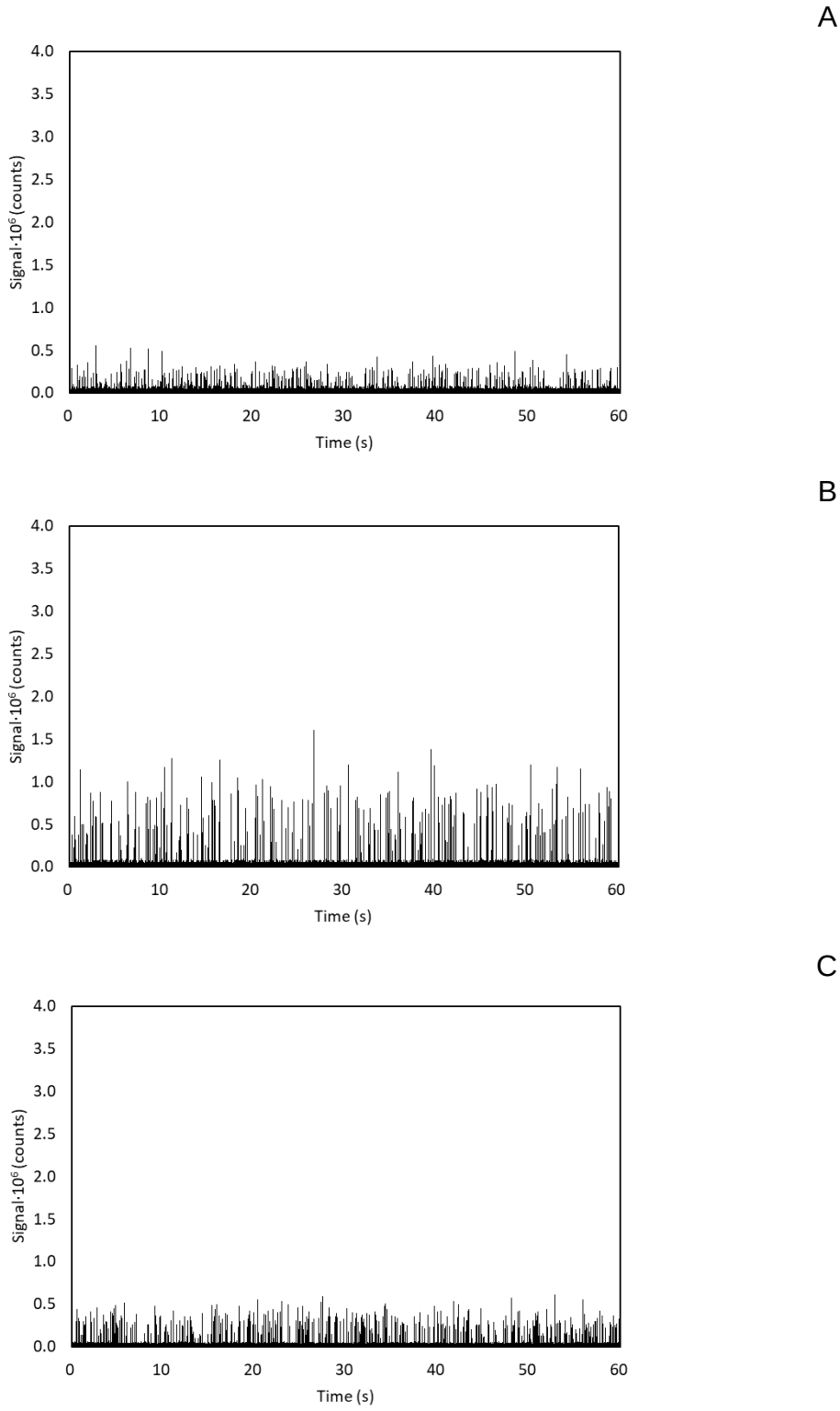


Figure S4. $^{78}Se^{+}$ time scan for 150 nm SeNPs suspension in (A) water, (B) 6% w w^{-1} glycerol and (C) 10% w w^{-1} ethanol. Sampling depth position: 12 mm. Number concentration of SeNPs: $2.0 \cdot 10^{4}$ mL^{-1}. Instrument: Agilent 8900 ICP-MS.

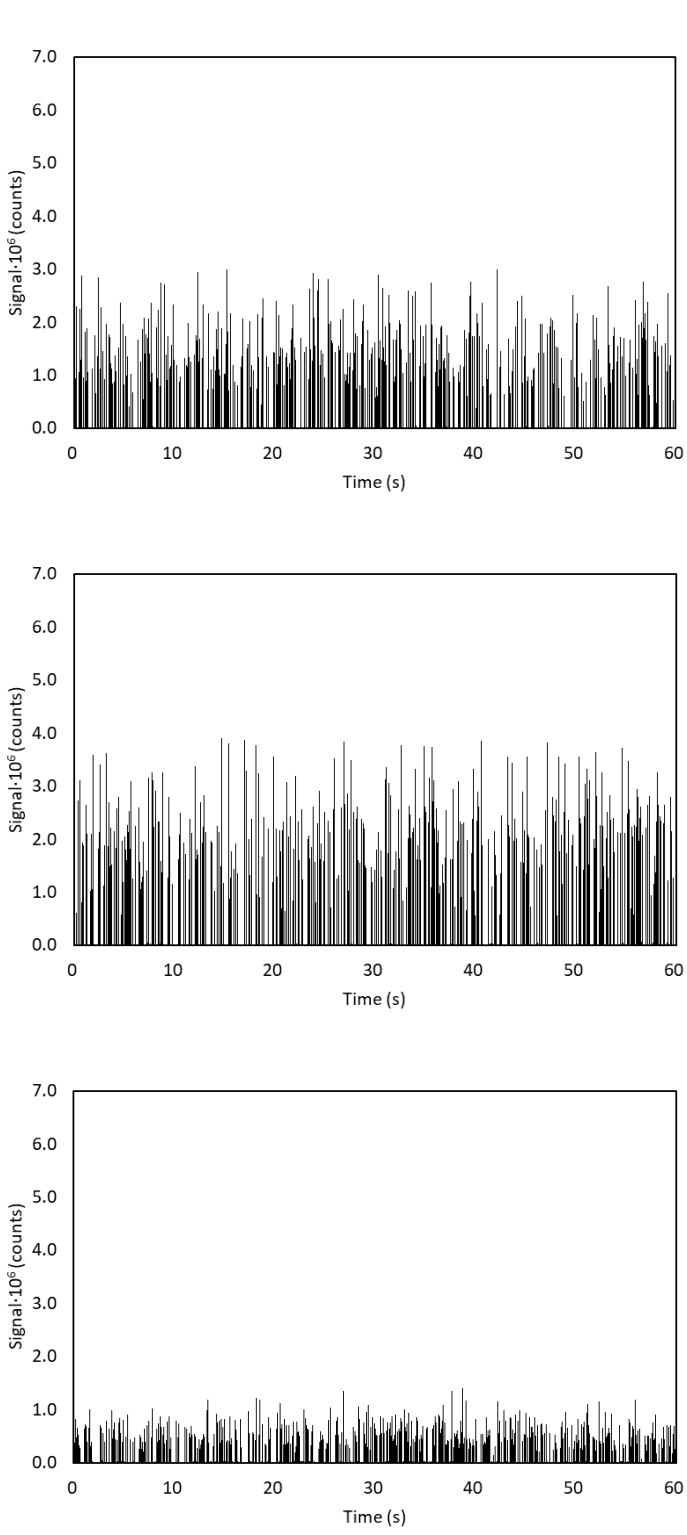


Figure S5. $^{197}Au^{+}$ time scan for 50 nm AuNPs suspension in (A) water, (B) 6% w w^{-1} glycerol and (C) 10% w w^{-1} ethanol. Sampling depth position: 8 mm. Number concentration of AuNPs: $2.5 \cdot 10^{4}$ mL^{-1}. Instrument: Agilent 8900 ICP-MS.

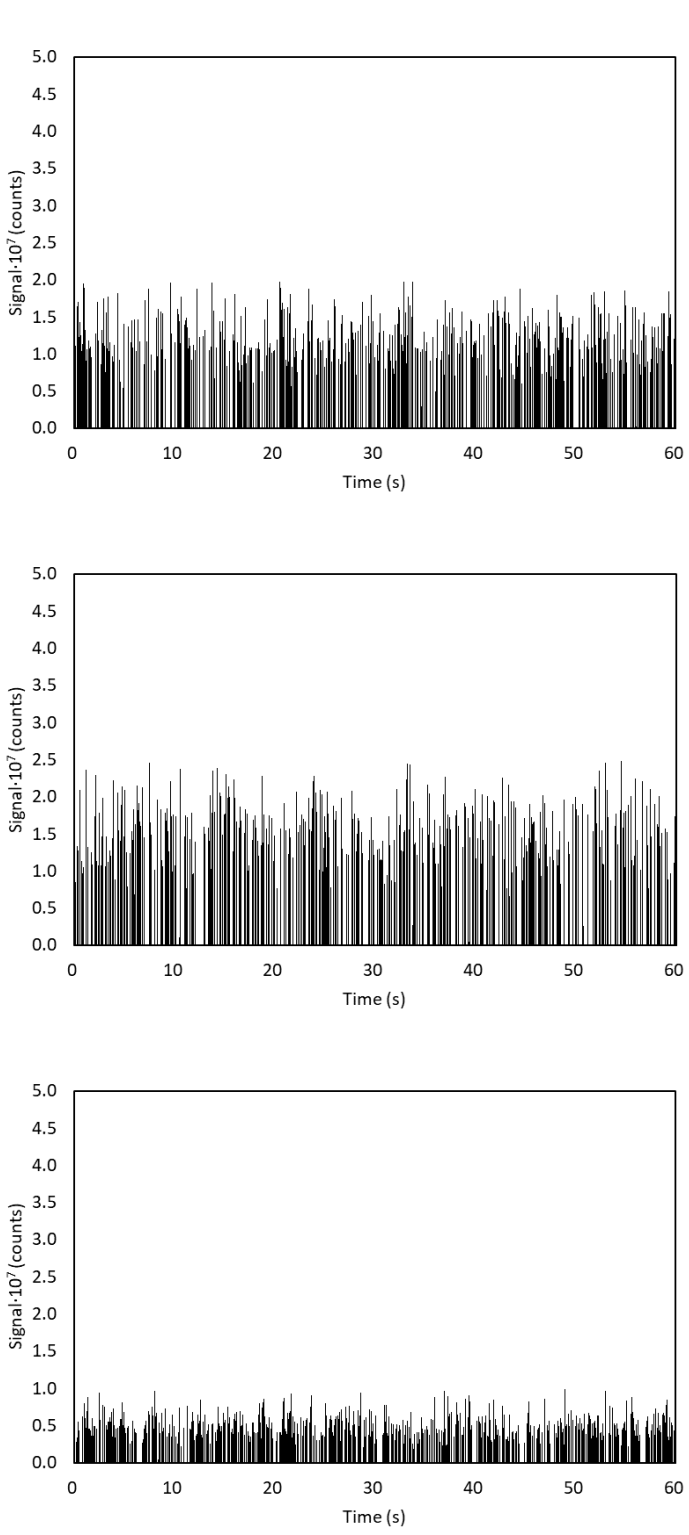
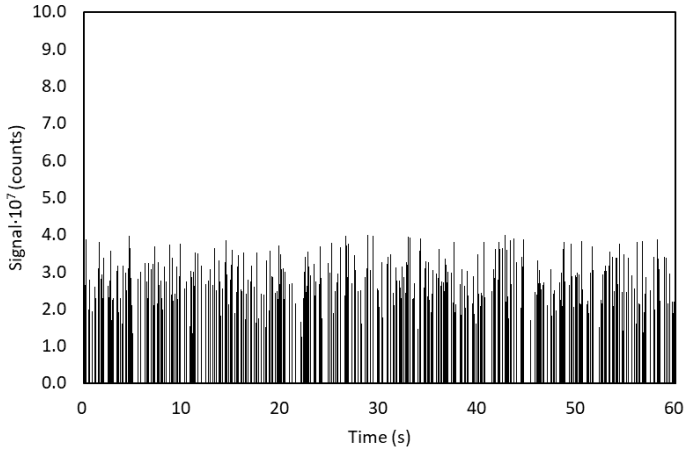
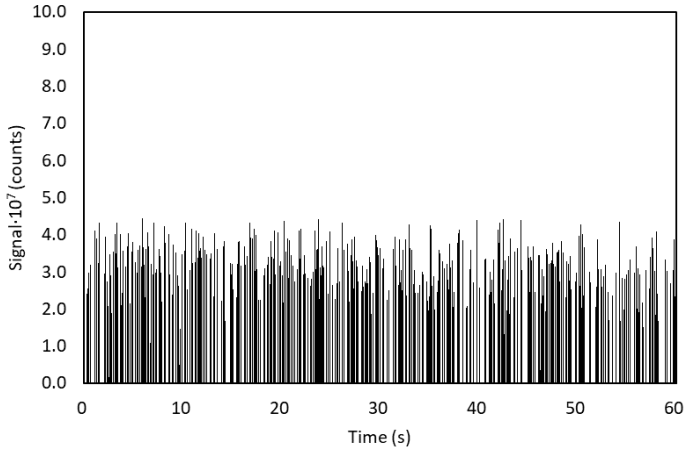


Figure S6. $^{197}Au^{+}$ time scan for 100 nm AuNPs suspension in (A) water, (B) 6% w w^{-1} glycerol and (C) 10% w w^{-1} ethanol. Sampling depth position: 8 mm. Number concentration of AuNPs: $3.5 \cdot 10^{4}$ mL^{-1}. Instrument: Agilent 8900 ICP-MS.

A



B



C

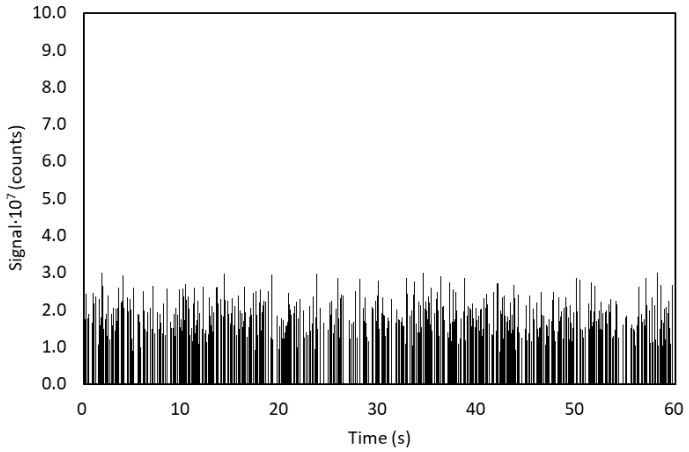


Figure S7. $^{197}Au^{+}$ time scan for 150 nm AuNPs suspension in (A) water, (B) 6% w w^{-1} glycerol and (C) 10% w w^{-1} ethanol. Sampling depth position: 8 mm. Number concentration of SeNPs: $2.1 \cdot 10^{4}$ mL^{-1}. Instrument: Agilent 8900 ICP-MS.

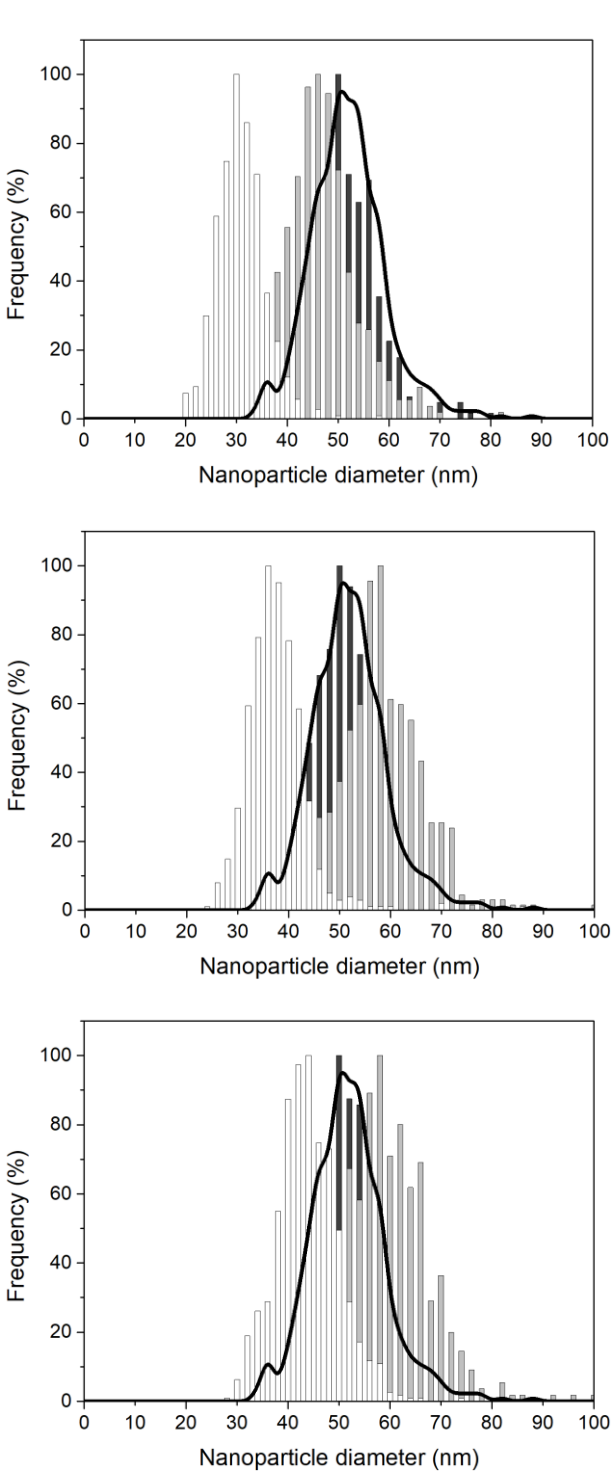


Figure S8. Influence of matrix composition on 50 nm AuNPs size distribution at sampling depth position of (A) 4 mm; (B) 8 mm; and (C) 12 mm. Matrices: water (dark grey bars); 6% w w^{-1} glycerol (light grey bars); and 10% w w^{-1} ethanol (white bars). Size distribution by means TEM is highlighted in a black line. Number concentration of AuNPs: $2.5 \cdot 10^4$ mL^{-1}. Instrument: Agilent 8900 ICP-MS. Calibration: water standards.

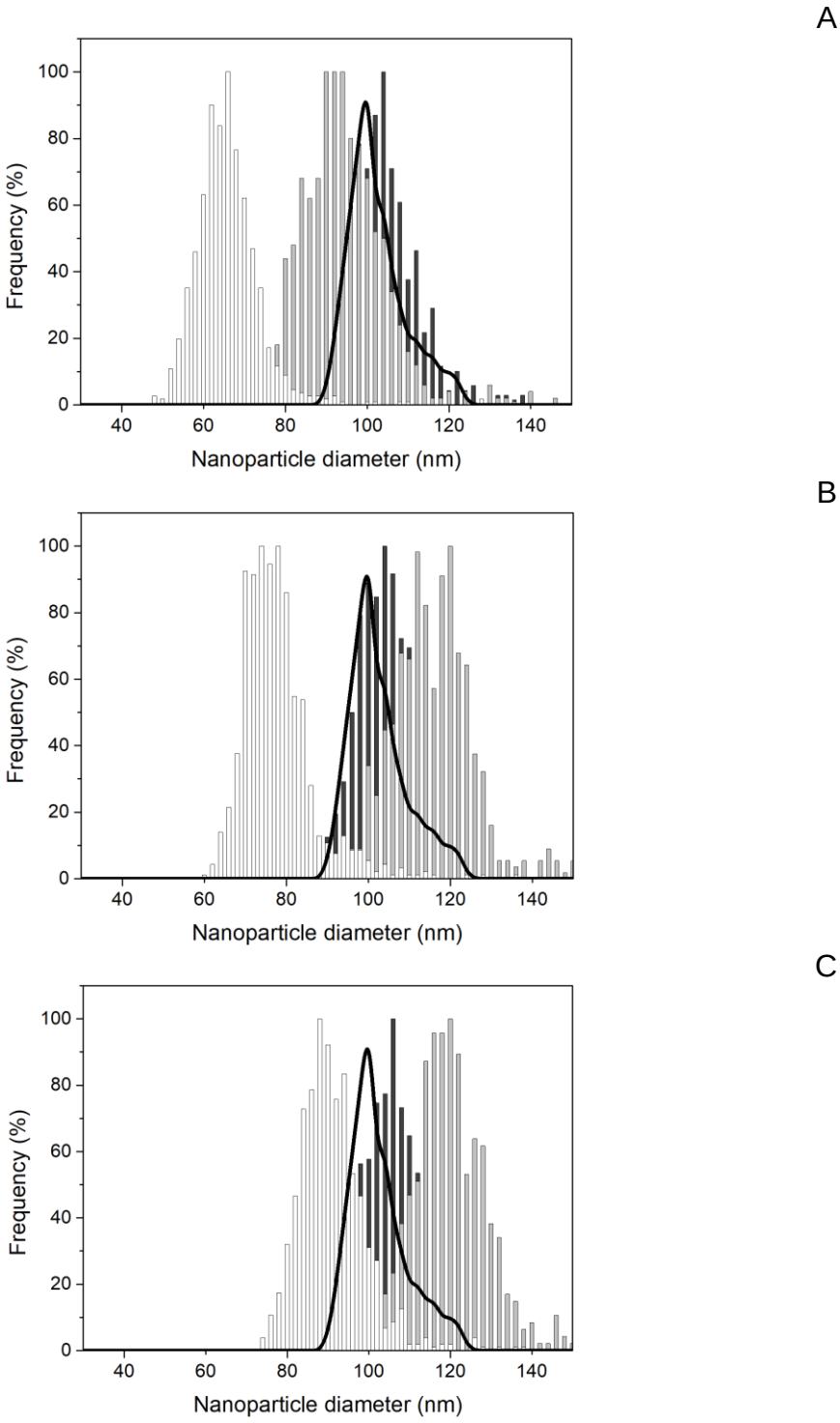


Figure S9. Influence of matrix composition on 100 nm AuNPs size distribution at sampling depth position of (A) 4 mm; (B) 8 mm; and (C) 12 mm. Matrices: water (dark grey bars); 6% w w^{-1} glycerol (light grey bars); and 10% w w^{-1} ethanol (white bars). Size distribution by means TEM is highlighted in a black line. Number concentration of AuNPs: $3.5 \cdot 10^4$ mL^{-1}. Instrument: Agilent 8900 ICP-MS. Calibration: water standards.

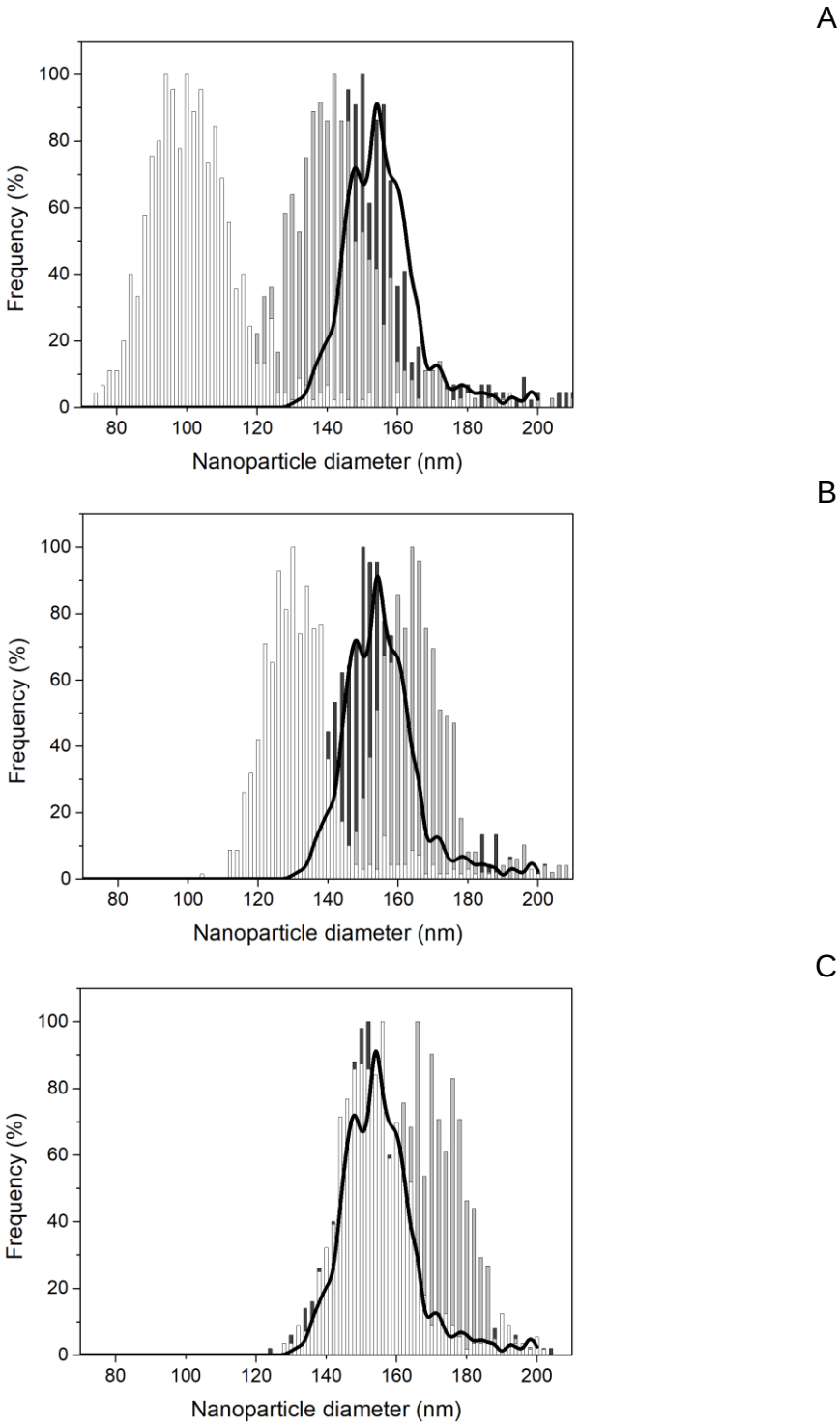


Figure S10. Influence of matrix composition on 150 nm AuNPs size distribution at sampling depth position of (A) 4 mm; (B) 8 mm; and (C) 12 mm. Matrices: water (dark grey bars); 6% w w^{-1} glycerol (light grey bars); and 10% w w^{-1} ethanol (white bars). Size distribution by means TEM is highlighted in a black line. Number concentration of AuNPs: $2.1 \cdot 10^4$ mL^{-1}. Instrument: Agilent 8900 ICP-MS. Calibration: water standards.