Electronic Supplementary Material (ESI) for Analyst.

Electronic Supplementary Material

Addressing the Presence of Biogenic Selenium Nanoparticles in Yeast Cells: Analytical Strategies Based on ICP-TQ-MS

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Table S1 Operating conditions of the iCAP TQ ICP-MS in the different measurement modes.

Parameter	
RF Power [W]	1550
Coolant gas flow [L min^{-1}]	14.0
Auxiliary gas flow [L min^{-1}]	0.8
Carrier gas flow [L min^{-1}]	0.8
Sheath gas flow [L min^{-1}]	0.31
Cell gas flow [mL min^{-1}]	0.31
Q1 bias [V]	0
Q_{cell} bias [V]	-5.94
Q3 bias [V]	-12.0
Q1 masses [u]	31 ($^{31}P^{+}$) or 80 ($^{80}Se^{+}$)
Q3 masses [u]	47 ($^{31}P^{16}O^{+}$) or 96 ($^{80}Se^{16}O^{+}$)
Single cell / single particle modes	
Dwell time [ms]	5 (0.1)
Sample flow rate [mL min^{-1}]	0.01
Run time [s]	120
HPLC-ICP-MS	
Dwell time [ms]	100
Sample flow rate [mL min^{-1}]	0.5
Run time [s]	480

Figure S1: Time-resolved measurements of yeast 1 monitoring phosphorous as $^{31}P^{16}O^{+}$ and selenium as $^{80}Se^{16}O^{+}$ before (a) and after adding (b) selenomethionine and (c) sodium selenite. (The final concentration of total added Se was 2000 mg kg^{-1} in yeast, equivalent to the Se content of SELM-1, (2031 ± 70) mg kg^{-1}.)

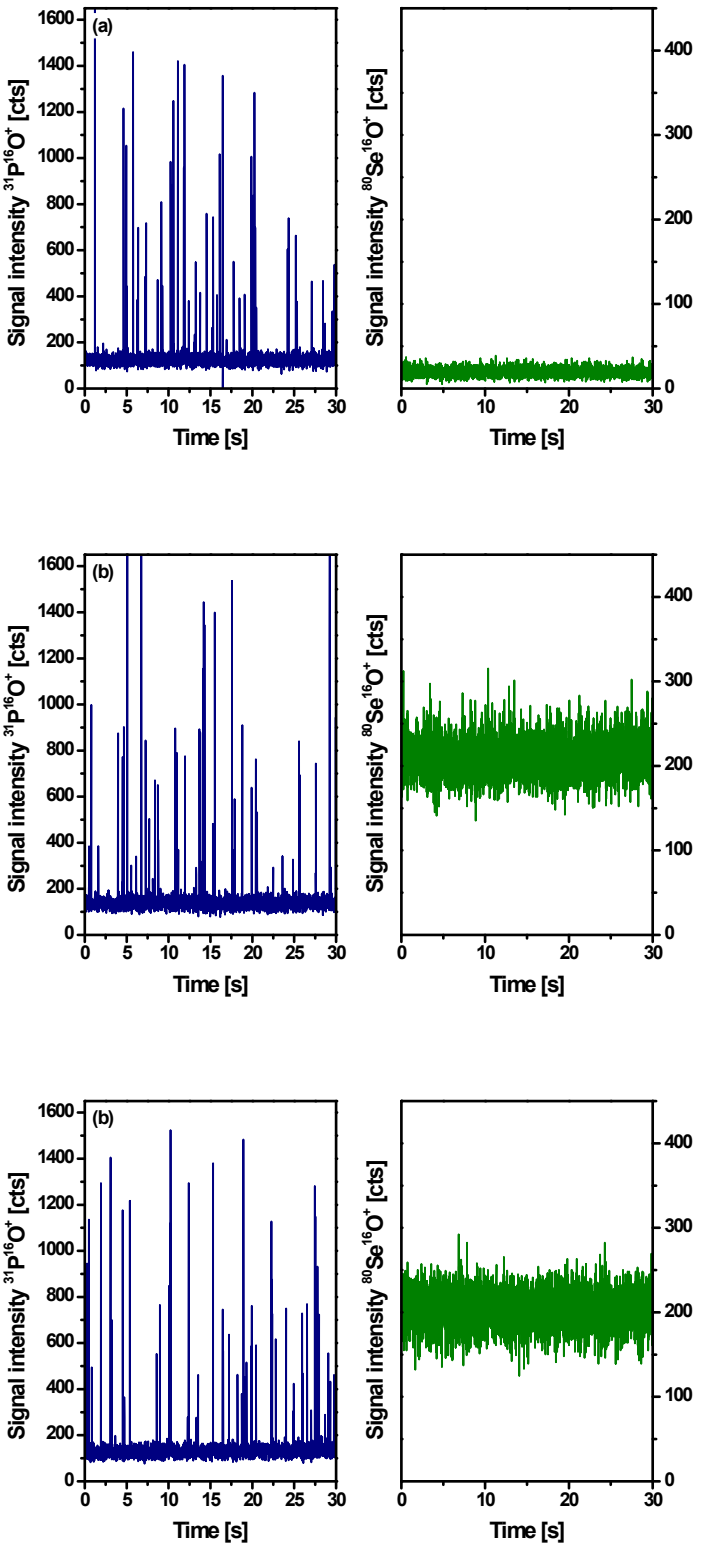

Figure S2: Single particle analysis of a standard suspension of Se nanoparticles (a) before and (b) after the mechanical treatment with the used glass.

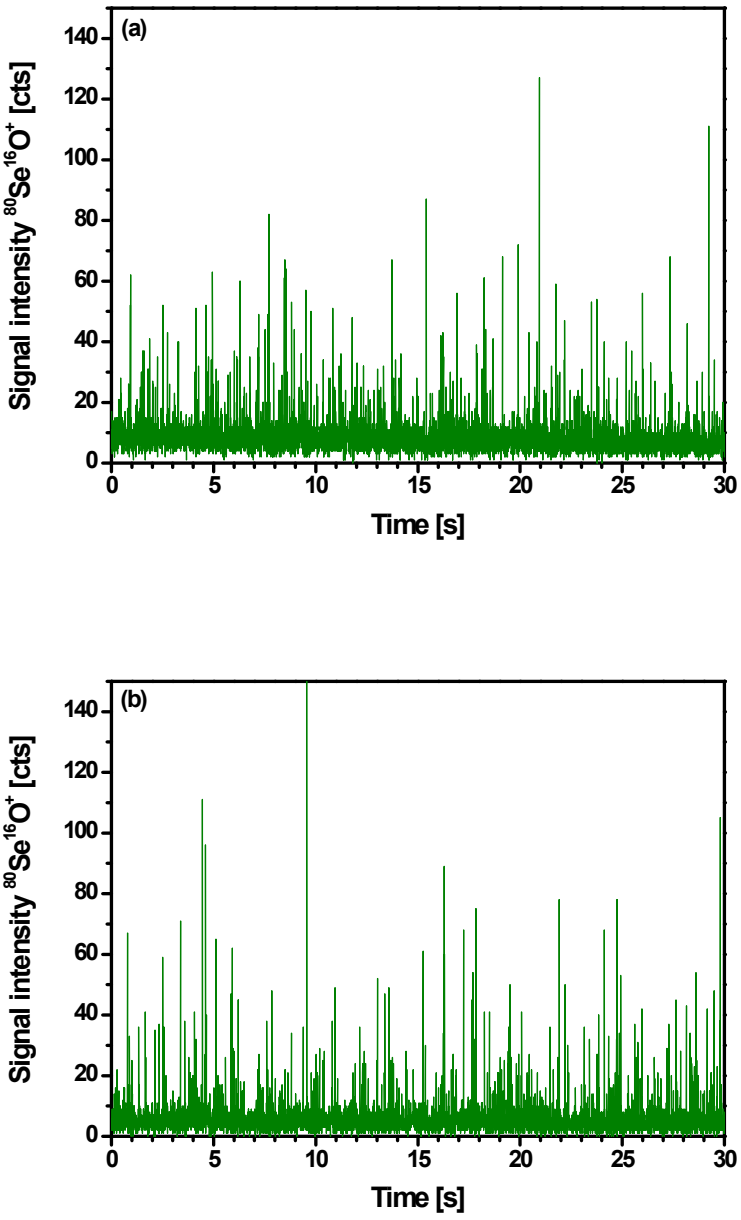

Figure S3: The obtained size distribution in Se-yeast 1 by single particle ICP-MS (bin size: 10 nm).

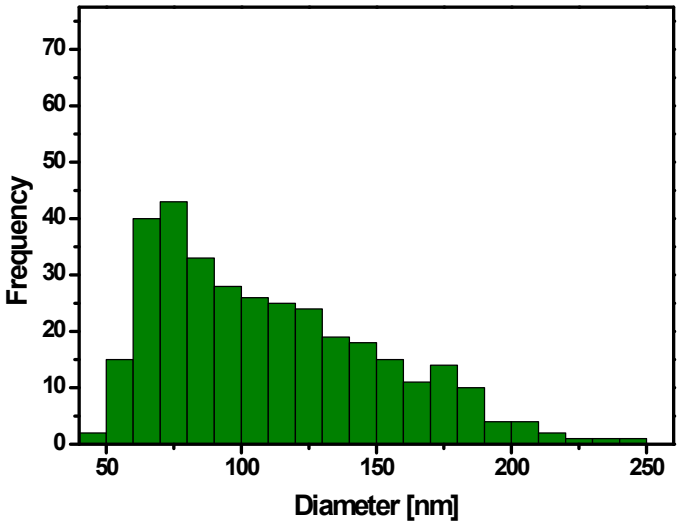

Figure S4: The EDX spectrum corresponding to the HR-TEM image shown in Figure 3 indicating the presence of selenium.

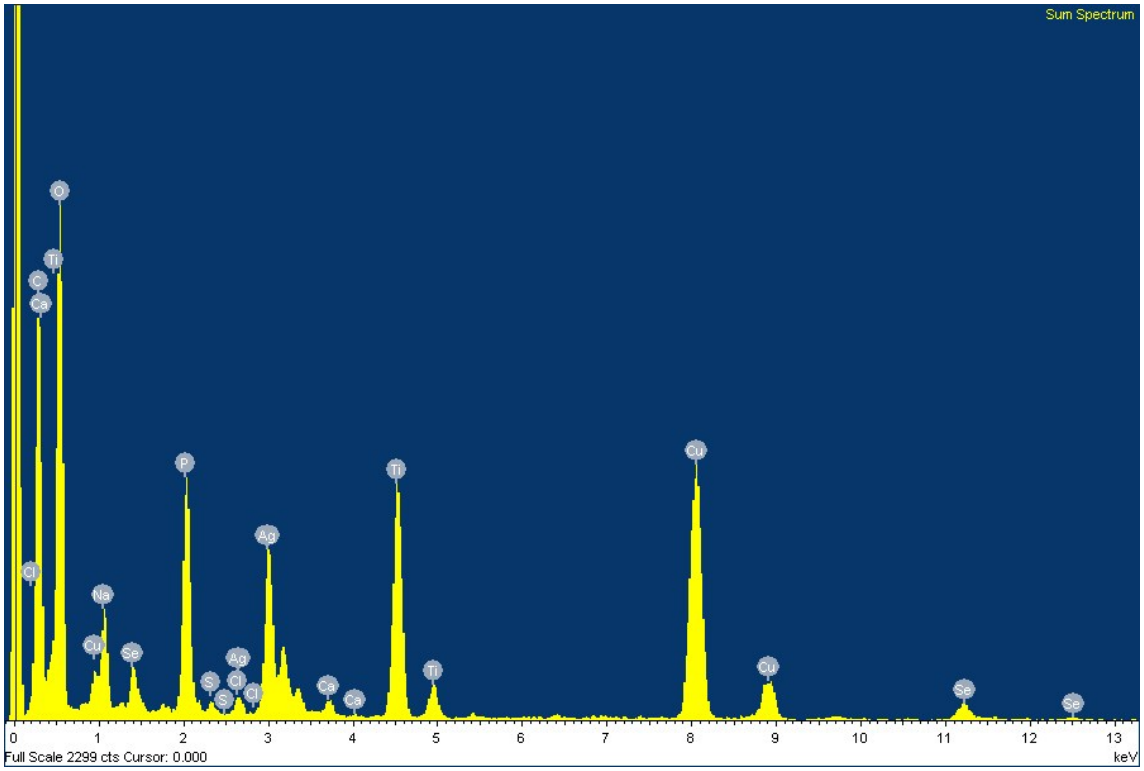

Figure S5: Single particle ICP-MS experiments on Se-yeast 1 after lysis (a) before and (b) after the reaction with sodium sulphite with a dwell time of 5 ms.