# Investigation of a Combined Microdroplet Generator and Pneumatic Nebulization System for Rapid Quantitative Determination of Metal-containing Nanoparticles using ICP-MS

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Table S-1 : Experimental parameters used for ICP-MS detection of dissolved silver using the dual inlet system (MDG and PN) and the MDG alone.

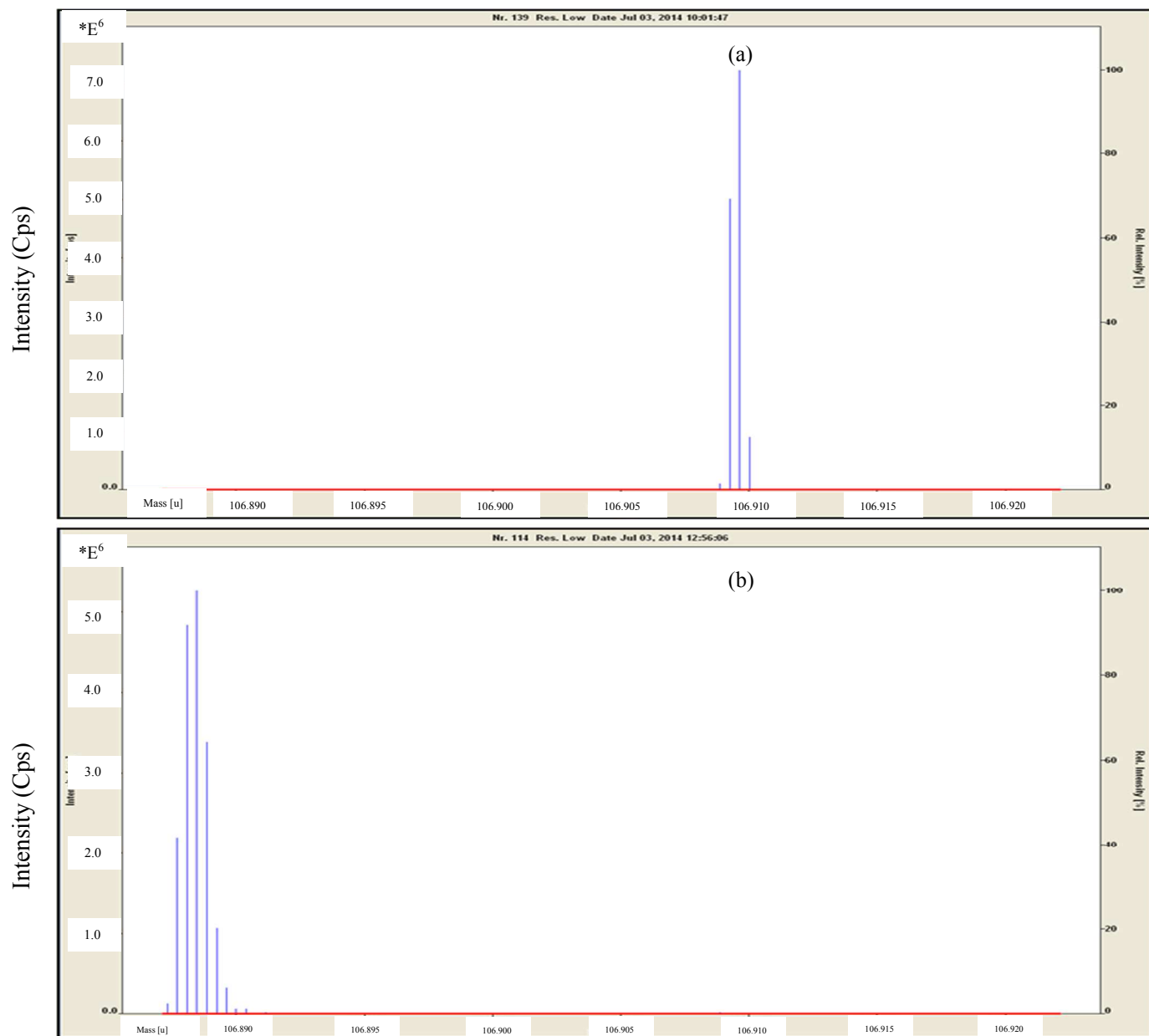| | MDG + PN | MDG |
|---|---|---|
| **RF power (W)** | 1200-1300 | 800-850 |
| **Ar flow rate (L min$^{-1}$)** | 0.78-0.82 | 0.72-0.78 |
| **He flow rate (L min$^{-1}$)** | 300-400 | 300-400 |
| **Torch z-position (mm)** | -3.5 | -3.5 |

Figure S-1: Comparison of the number of samples per peak given signal in the measurement of Ag elemental solution (100 µg L$^{-1}$) using a MDG in two different configurations, on its own (a) or orthogonally coupled with a pneumatic nebulizer aspirating.H$_2$O.(b).
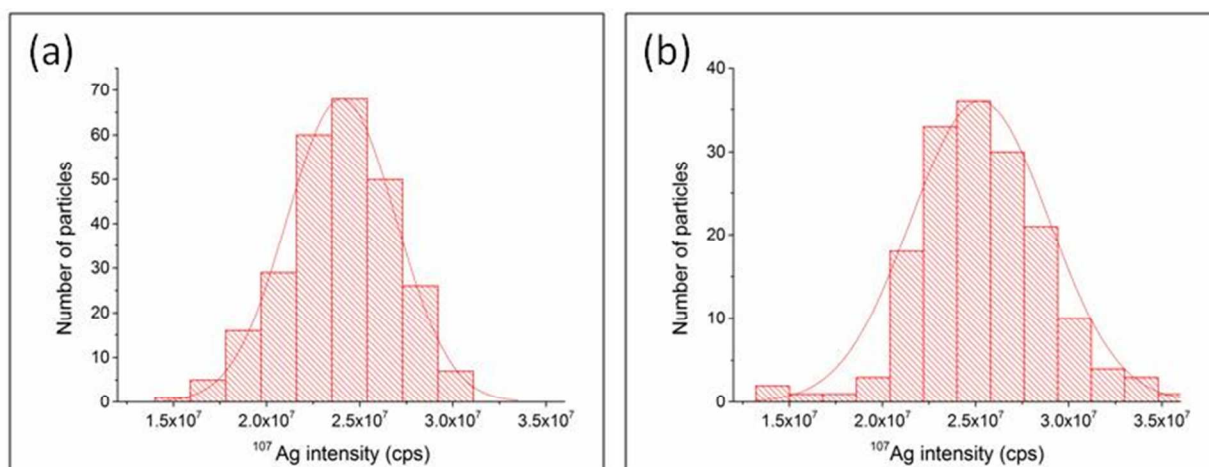
Figure S-2: Measurement of 80 nm Ag NPs using the dual configuration (MDG & PN) while introducing the sample through a) the pneumatic nebulizer (200 ng L$^{-1}$), at flow rate ca. 20 µL min$^{-1}$ and b) the MDG (100 µg L$^{-1}$) at flow rate ca. 22.5 nL min$^{-1}$
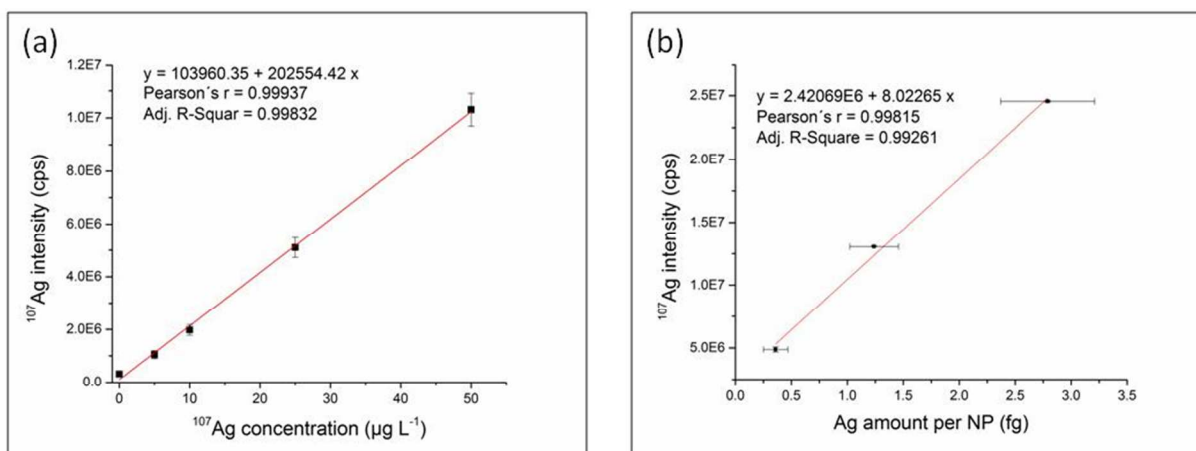


Figure S-3: Calibration curves for a) dissolved Ag and b) Ag NPs, using the dual configuration (MDG & PN) and introducing the sample through the MDG. y-error bars correspond to the standard deviation in the detected $^{107}$Ag counts per second from three replicates, n = 3; x-error bars (b) correspond to the uncertainties in the Ag content reported by the manufacturer of the NP material
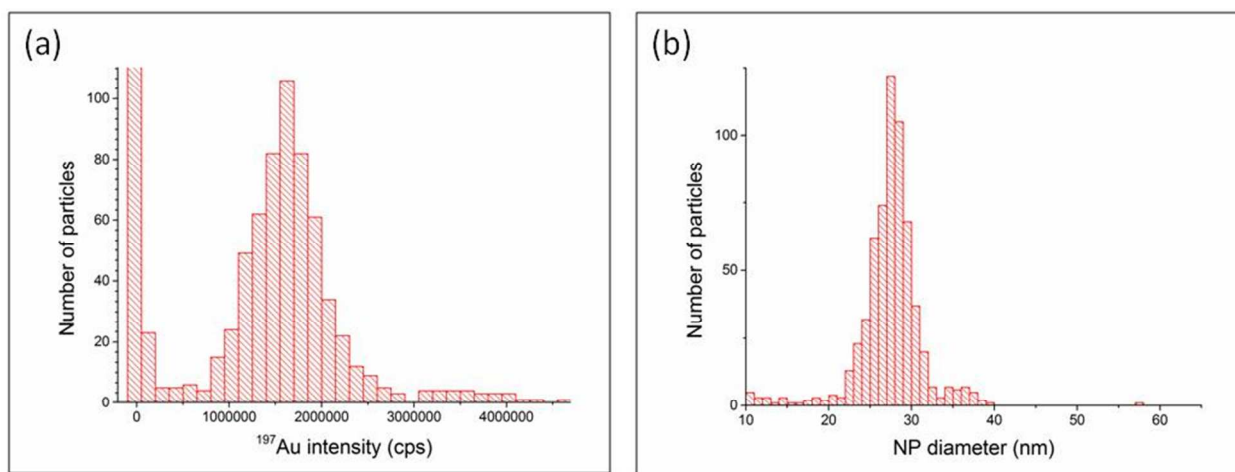
Figure S-4: Histogram showing a) intensity counts and b) diameter distribution of 30 nm Au NPs using the dual system. The Au NPs were introduced through the nebulizer

Table S-2 Nebulization efficiency for 80 nm Ag NPs analyzed with the dual inlet configuration. Comparison of two different calculation procedures based on signal intensity and NP counting respectively. Uncertainties correspond to the standard deviation in the calculation of the nebulization efficiency from four replicates, n = 4

| | 80 nm Ag NPs | |
|---|---|---|
| Day | $\varepsilon_n$ (intensity method) | $\varepsilon_n$ (counting method) |
| 1 | 0.0627 ± 0.0007 | 0.0620 ± 0.0006 |
| 1 | 0.0622 ± 0.0001 | 0.0613 ± 0.0004 |
| 2 | 0.0671 ± 0.0013 | 0.0668 ± 0.0014 |
| 2 | 0.0623 ± 0.0032 | 0.0648 ± 0.0030 |
| Mean | 0.0636 | 0.0637 |
| St. Dev. | 0.0024 | 0.0025 |