***Supporting Information***

**"Pure" silver hydrosol: nanoparticles and stabilizing carbonate ions**

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Three statistical models were used to describe the size distribution of NPs. These were Gaussian, Lorentz and a log-normal model. For the simulation were used statistical tools of OriginPro 2018 software. Simulation results are presented in tables S1-6.

**Table S1** Parameters of size distribution model for deaerated NPs solutions (Ag3D).

|  |  |  |  |
| --- | --- | --- | --- |
| Model | Gauss | Lorentz | LogNormal |
| Equation | y=y0 + (A/(w\*sqrt(pi/2)))\*exp(-2\*((x-xc)/w)^2) | y = y0 + (2\*A/pi)\*(w/(4\*(x-xc)^2 + w^2)) | y = y0 + A/(sqrt(2\*pi)\*w\*x)\*exp(-(ln(x/xc))^2/(2\*w^2)) |
| y0 | 0 | 0 | 0 |
| xc | 10,01518 ± 0,25239 | 10,37863 ± 0,53722 | 10,10576 ± 0,37413 |
| w | 7,01719 ± 0,5132 | 0,38691 ± 0,04901 | 7,01261 ± 1,16804 |
| A | 205,15975 ± 12,85263 | 212,94844 ± 22,01247 | 273,43472 ± 31,83024 |
| Reduced Chi-Sqr | 4,34872 | 11,64657 | 9,66395 |
| R-Square (COD) | 0,95696 | 0,88473 | 0,90436 |
| Adj. R-Square | 0,94261 | 0,84631 | 0,87247 |

**Table S2** Parameters of size distribution model for deaerated NPs solutions (Ag3A).

|  |  |  |  |
| --- | --- | --- | --- |
| Model | Gauss | Lorentz | LogNormal |
| Equation | y=y0 + (A/(w\*sqrt(pi/2)))\*exp(-2\*((x-xc)/w)^2) | y = y0 + (2\*A/pi)\*(w/(4\*(x-xc)^2 + w^2)) | y = y0 + A/(sqrt(2\*pi)\*w\*x)\*exp(-(ln(x/xc))^2/(2\*w^2)) |
| y0 | 0 | 0 | 0 |
| xc | 20,20574 ± 0,18501 | 20,02366 ± 0,10619 | 20,33425 ± 0,16301 |
| w | 4,52779 ± 0,37029 | 3,95481 ± 0,4386 | 0,11578 ± 0,00795 |
| A | 172,04484 ± 12,179 | 219,79222 ± 14,13613 | 176,37916 ± 10,49996 |
| Reduced Chi-Sqr | 6,15847 | 3,5998 | 4,42283 |
| R-Square (COD) | 0,93311 | 0,9609 | 0,95196 |
| Adj. R-Square | 0,92419 | 0,95568 | 0,94555 |

**Table S3** Parameters of size distribution model for deaerated NPs solutions (Ag1D).

|  |  |  |  |
| --- | --- | --- | --- |
| Model | Gauss | Lorentz | LogNormal |
| Equation | y=y0 + (A/(w\*sqrt(pi/2)))\*exp(-2\*((x-xc)/w)^2) | y = y0 + (2\*A/pi)\*(w/(4\*(x-xc)^2 + w^2)) | y = y0 + A/(sqrt(2\*pi)\*w\*x)\*exp(-(ln(x/xc))^2/(2\*w^2)) |
| y0 | 0 | 0 | 0 |
| xc | 7,44943 ± 0,18877 | 7,27782 ± 0,16147 | 7,83029 ± 0,09341 |
| w | 5,23447 ± 0,38788 | 5,27408 ± 0,45094 | 0,37913 ± 0,01159 |
| A | 173,64655 ± 10,94617 | 235,91691 ± 14,60962 | 185,62004 ± 4,81063 |
| Reduced Chi-Sqr | 4,17074 | 2,865 | 0,73975 |
| R-Square (COD) | 0,93059 | 0,95232 | 0,98769 |
| Adj. R-Square | 0,92428 | 0,94798 | 0,98657 |

**Table S4** Parameters of size distribution model for deaerated NPs solutions (Ag1A).

|  |  |  |  |
| --- | --- | --- | --- |
| Model | Gauss | Lorentz | LogNormal |
| Equation | y=y0 + (A/(w\*sqrt(pi/2)))\*exp(-2\*((x-xc)/w)^2) | y = y0 + (2\*A/pi)\*(w/(4\*(x-xc)^2 + w^2)) | y = y0 + A/(sqrt(2\*pi)\*w\*x)\*exp(-(ln(x/xc))^2/(2\*w^2)) |
| y0 | 0 | 0 | 0 |
| xc | 12,25045 ± 0,08235 | 12,15034 ± 0,09534 | 12,46007 ± 0,07329 |
| w | 5,67167 ± 0,16485 | 5,53791 ± 0,29968 | 0,24007 ± 0,00573 |
| A | 173,85347 ± 4,37368 | 228,98177 ± 8,44817 | 177,71983 ± 3,67029 |
| Reduced Chi-Sqr | 0,63378 | 0,94521 | 0,42887 |
| R-Square (COD) | 0,98163 | 0,97261 | 0,98757 |
| Adj. R-Square | 0,98064 | 0,97113 | 0,9869 |

**Table S5.** Parameters of size distribution model for deaerated NPs solutions (Ag3D-4).

|  |  |  |  |
| --- | --- | --- | --- |
| Model | Gauss | Lorentz | LogNormal |
| Equation | y=y0 + (A/(w\*sqrt(pi/2)))\*exp(-2\*((x-xc)/w)^2) | y = y0 + (2\*A/pi)\*(w/(4\*(x-xc)^2 + w^2)) | y = y0 + A/(sqrt(2\*pi)\*w\*x)\*exp(-(ln(x/xc))^2/(2\*w^2)) |
| y0 | 0 | 0 | 0 |
| xc | 12,34162 ± 0,35316 | 12,08614 ± 0,20656 | 12,56906 ± 0,23158 |
| w | 5,19586 ± 0,76438 | 5,0871 ± 0,74714 | 0,20967 ± 0,01841 |
| A | 193,2125 ± 23,38704 | 262,09259 ± 25,61138 | 195,29997 ± 14,6105 |
| Reduced Chi-Sqr | 17,4205 | 7,56298 | 7,61155 |
| R-Square (COD) | 0,89301 | 0,95355 | 0,95325 |
| Adj. R-Square | 0,85021 | 0,93497 | 0,93455 |

**Table S6.** Parameters of size distribution model for deaerated NPs solutions (Ag3A-4).

|  |  |  |  |
| --- | --- | --- | --- |
| Model | Gauss | Lorentz | LogNormal |
| Equation | y=y0 + (A/(w\*sqrt(pi/2)))\*exp(-2\*((x-xc)/w)^2) | y = y0 + (2\*A/pi)\*(w/(4\*(x-xc)^2 + w^2)) | y = y0 + A/(sqrt(2\*pi)\*w\*x)\*exp(-(ln(x/xc))^2/(2\*w^2)) |
| y0 | 0 | 0 | 0 |
| xc | 20,51528 ± 0,28384 | 20,64162 ± 0,19517 | 20,6328 ± 0,34339 |
| w | 4,94628 ± 0,5694 | 4,28815 ± 0,50797 | 0,12027 ± 0,01652 |
| A | 152,18698 ± 15,14167 | 190,29395 ± 16,36491 | 150,92296 ± 17,95578 |
| Reduced Chi-Sqr | 8,69226 | 4,73795 | 12,26408 |
| R-Square (COD) | 0,92325 | 0,95817 | 0,89172 |
| Adj. R-Square | 0,89767 | 0,94422 | 0,85562 |



**Fig. S1** EDS spectra of NPs synthetized in deaerated (a) and in aerated (b) solutions, respectively.



**Fig. S2** Concentration of oxalate ions *vs.* UV-irradiation time.



**Fig. S3** Dependence of scattering intensity vs. *ζ*-potential.