Supplementary Materials

Doxorubicin-loaded Silica Nanocomposites for Cancer Treatment

Victoriya Popova, Yuliya Poletaeva, Alexey Chubarov, Dmitrii Pyshnyi and Elena Dmitrienko

Institute of Chemical Biology and Fundamental Medicine (ICBFM), Siberian Branch of Russian Academy of Sciences, 8 Lavrentiev Avenue, 630090 Novosibirsk, Russia

Silica nanoparticles (SiNPs) were characterized using dynamic light scattering (DLS) on a Malvern Zetasizer Nano device (Malvern Instruments, Great Britain). For DLS studies, nanoparticles were diluted in deionized water to a concentration of 250 μg/mL.

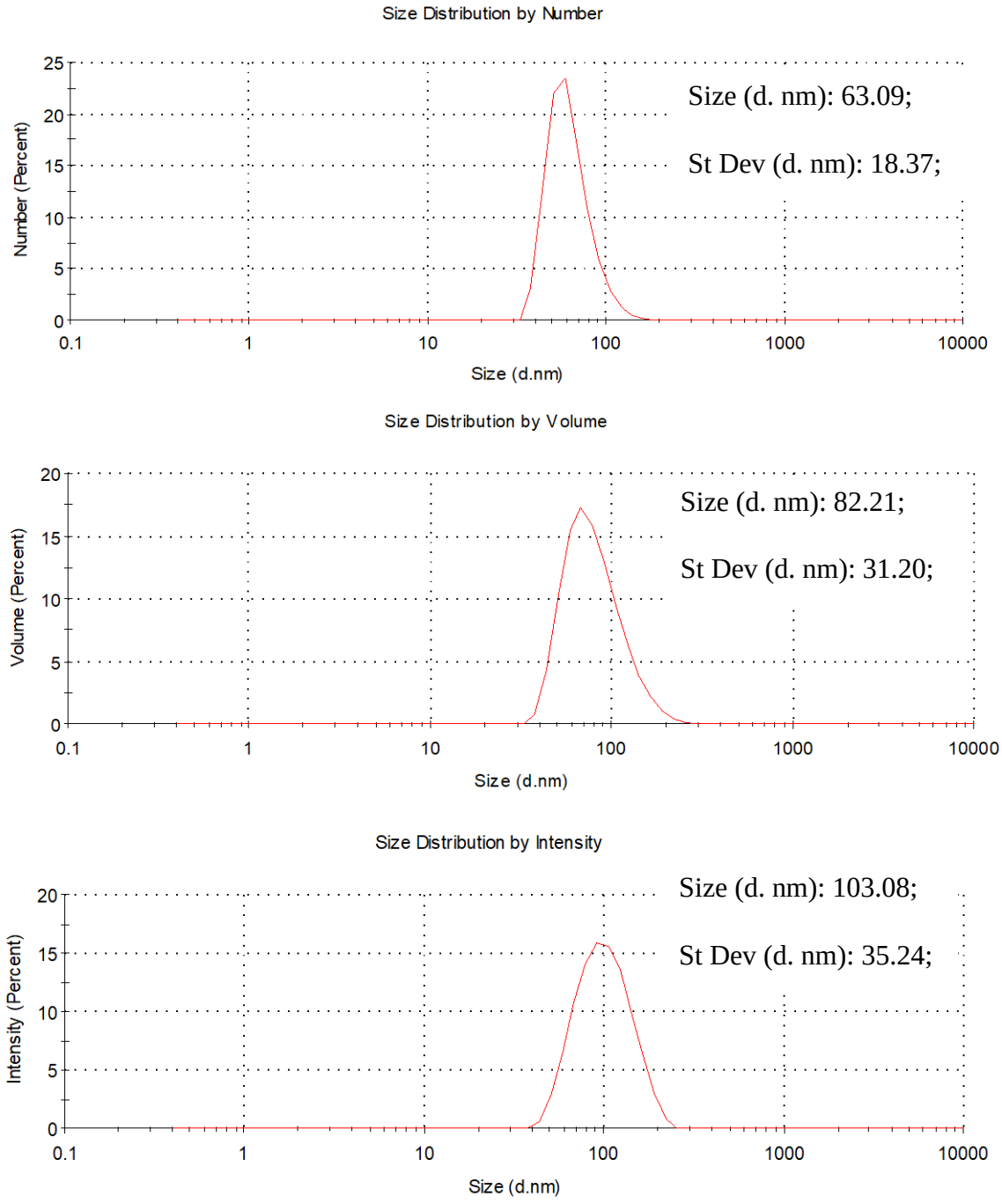


Figure S1. DLS size distribution data (Number, Volume, and Intensity) for method Rao et al. [68] with 0.018 M TEOS. The particle size by Number is 63 ± 1 nm (PDI = 0.09 ± 0.01).

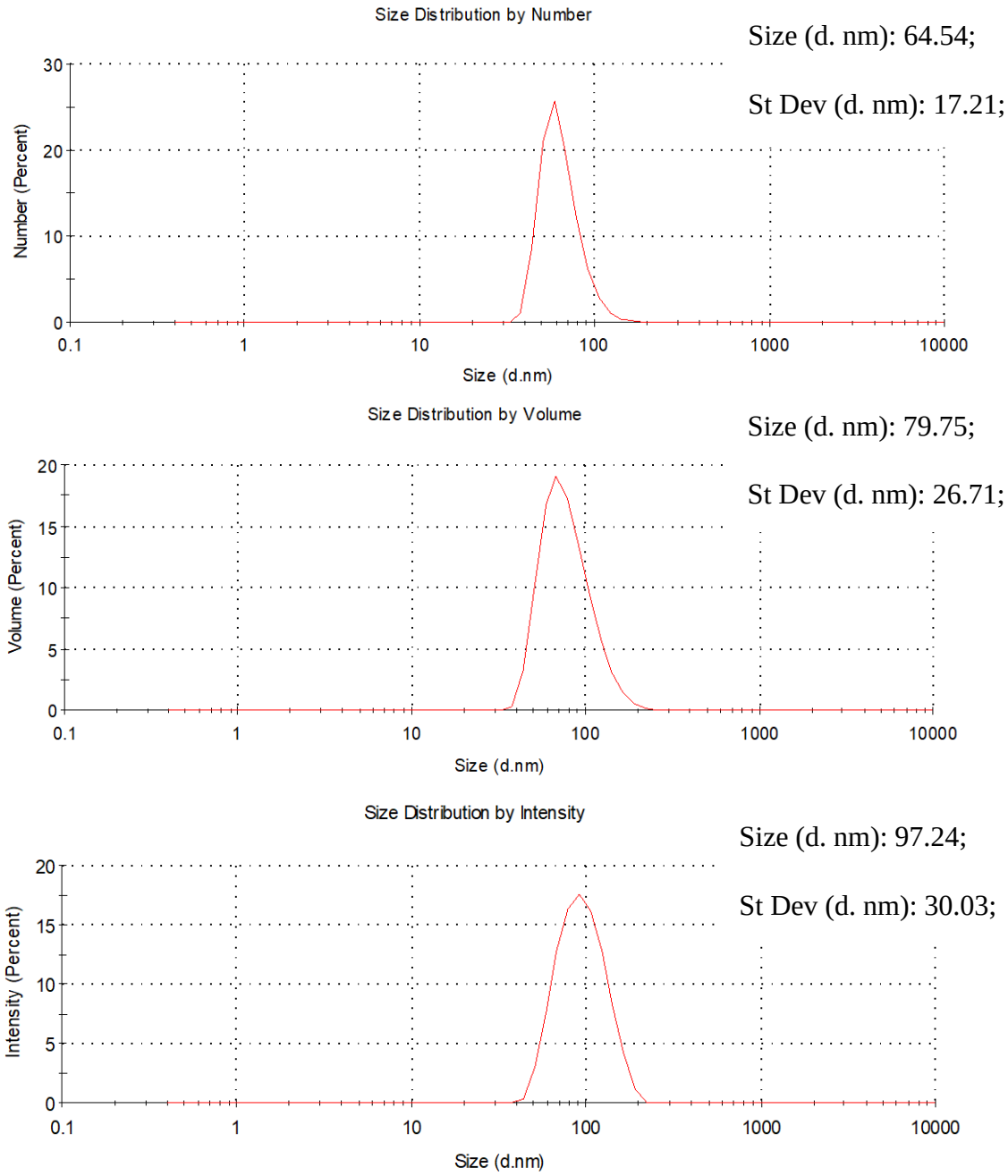


Figure S2. DLS size distribution data (Number, Volume, and Intensity) for method Rao et al. [68] with 0.018 M TEOS in 50 mL synthesis conditions. The particle size by Number is 64 ± 2 nm (PDI = 0.10 ± 0.01).

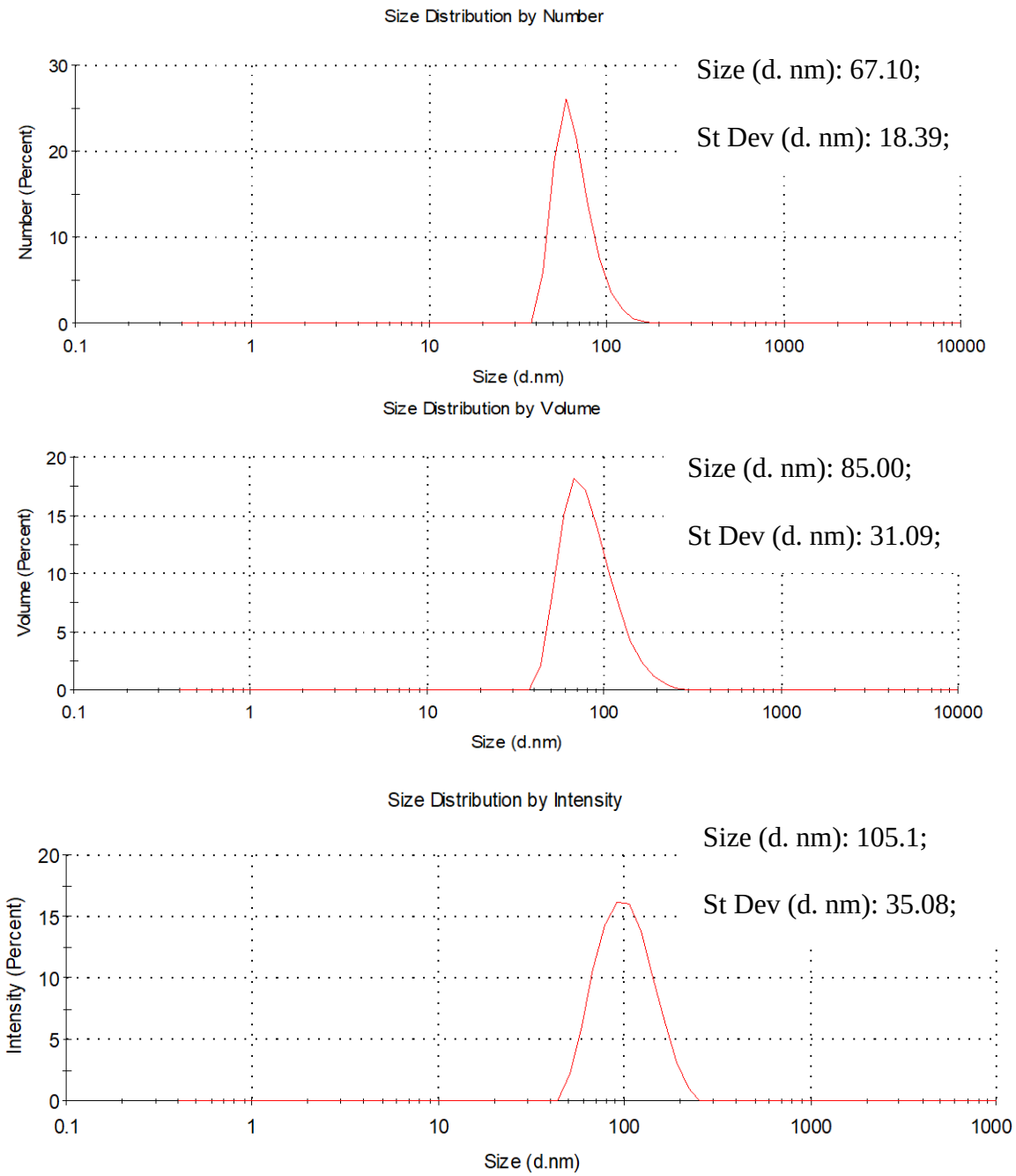


Figure S3. DLS size distribution data (Number, Volume, and Intensity) for method Rao et al. [68] with 0.018 M TEOS after one year storage. The particle size by Number is 67 ± 5 nm (PDI = 0.10 ± 0.01).

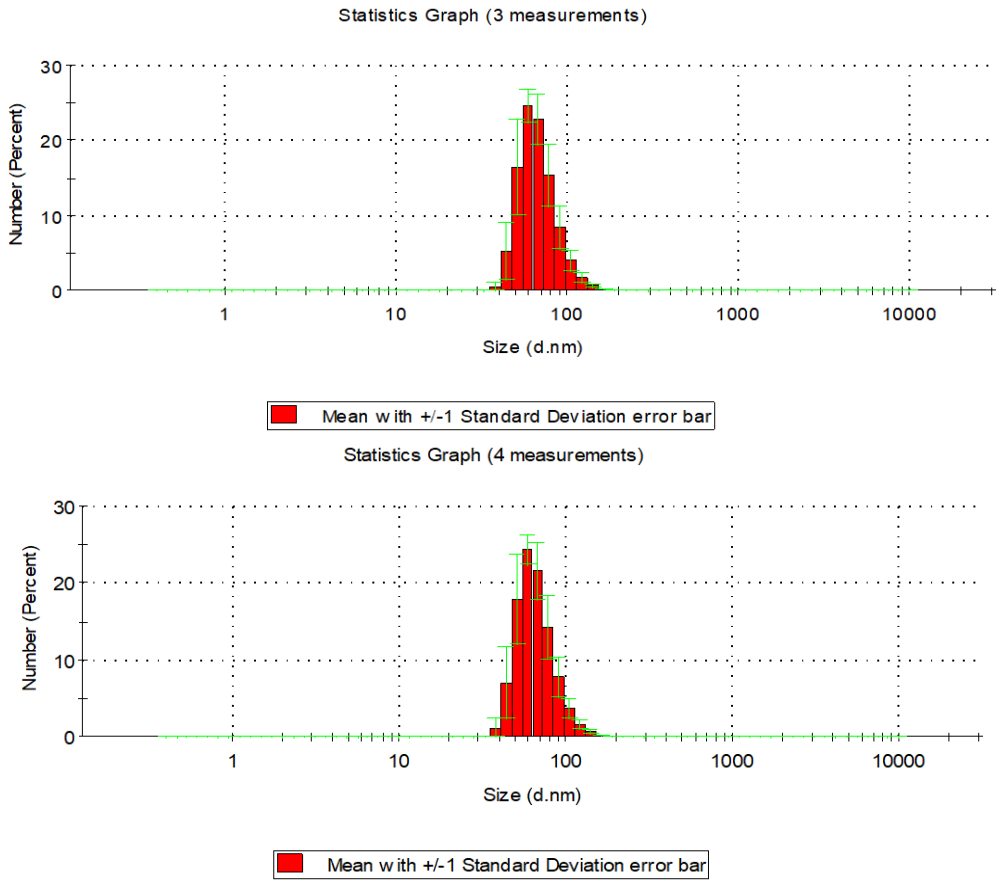


Figure S4. DLS size distribution data (Number) for method Rao et al. [68] with 0.018 M TEOS after synthesis (up) and after one year storage (bottom).

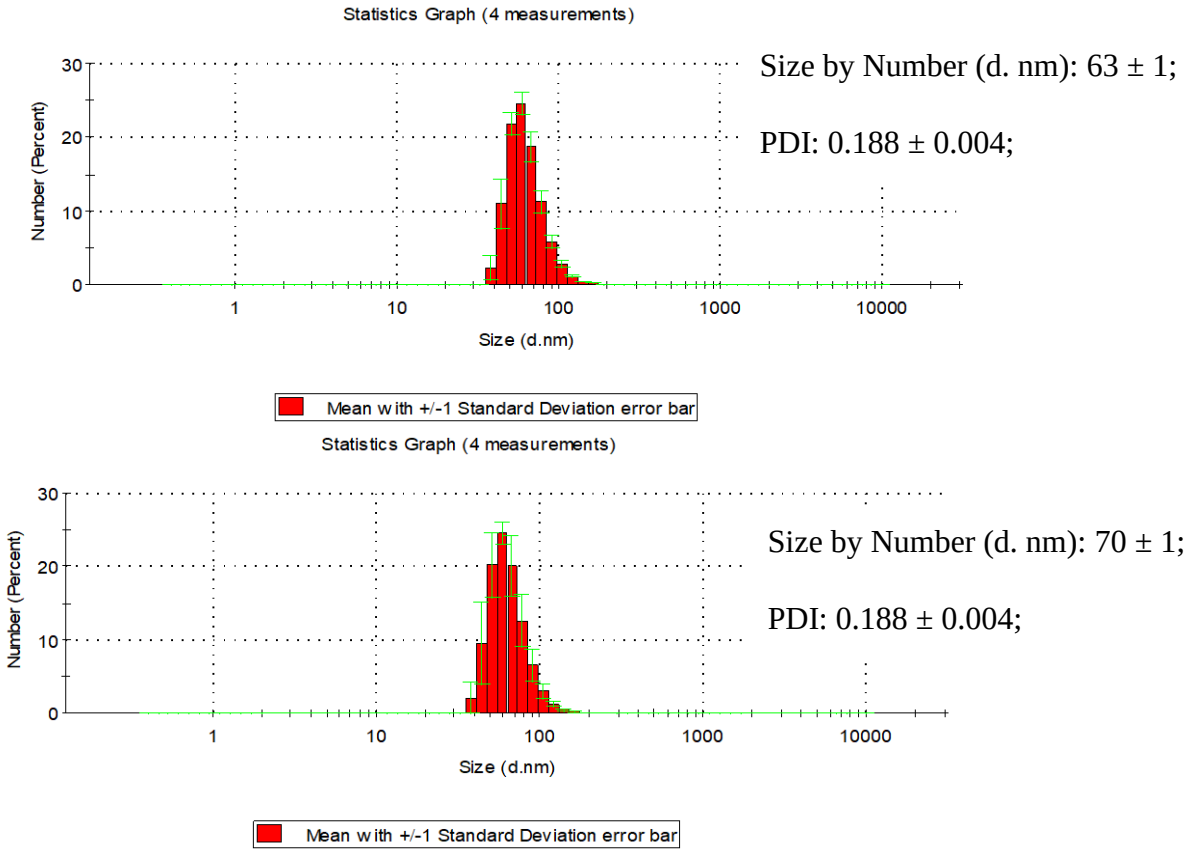
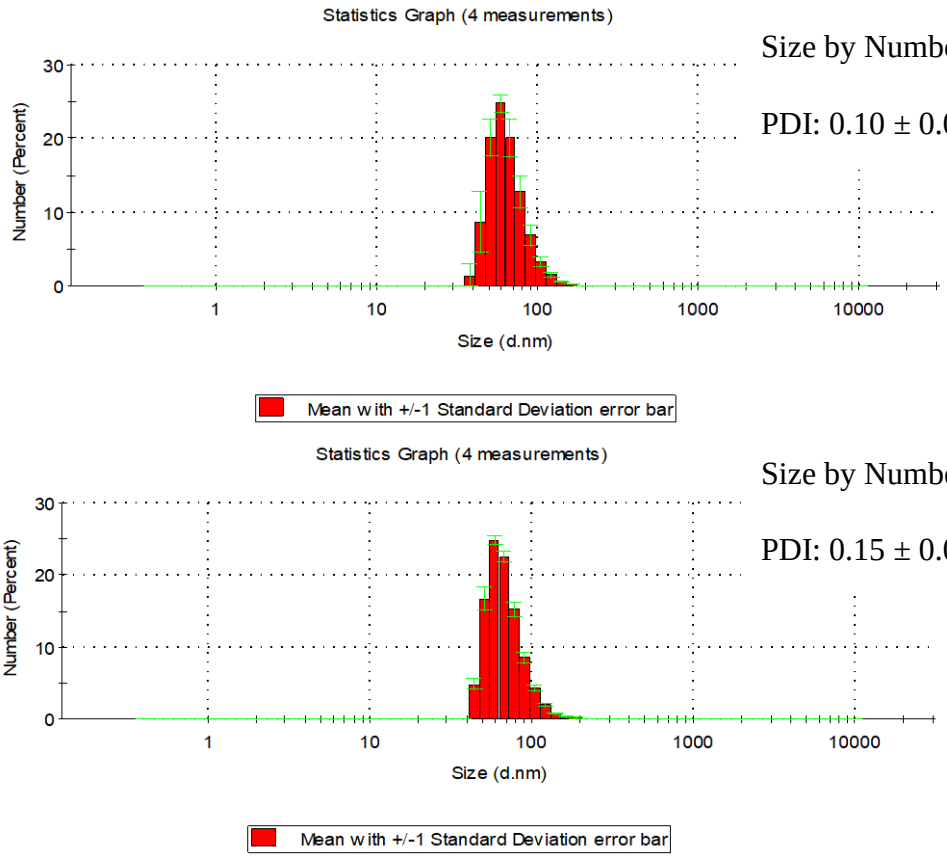


Figure S5. DLS size distribution data (Number) for method Rao et al. [68] with 0.018 M TEOS diluted in 100 mM sodium acetate buffer pH 4 (up), and after 7 days (bottom).



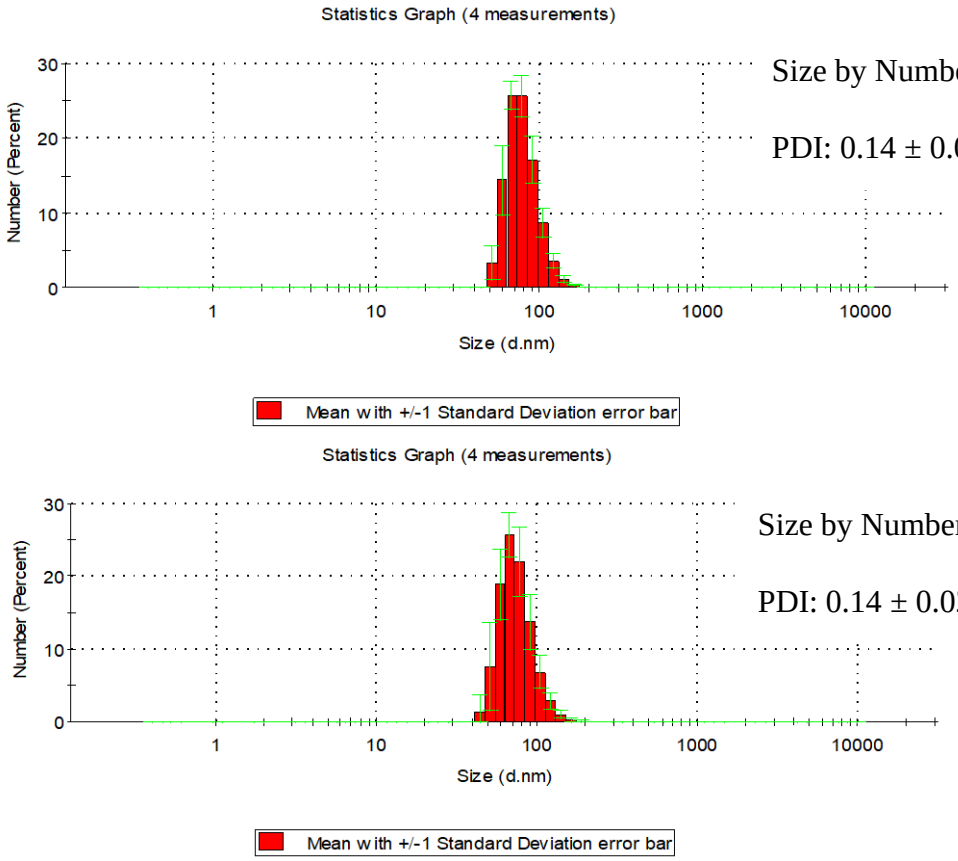
Size by Number (d. nm): 63 ± 1;

PDI: 0.10 ± 0.01;

Size by Number (d. nm): 68 ± 3;

PDI: 0.15 ± 0.03;

Figure S6. DLS size distribution data (Number) for method Rao et al. [68] with 0.018 M TEOS diluted in 100 mM sodium acetate buffer pH 5 (up), and after 7 days (bottom).



Size by Number (d. nm): 77 ± 5;

PDI: 0.14 ± 0.02;

Size by Number (d. nm): 75 ± 3;

PDI: 0.14 ± 0.02;

Figure S7. DLS size distribution data (Number) for method Rao et al. [68] with 0.018 M TEOS in 100 mM sodium acetate buffer pH 6 (up), and after 7 days (bottom).

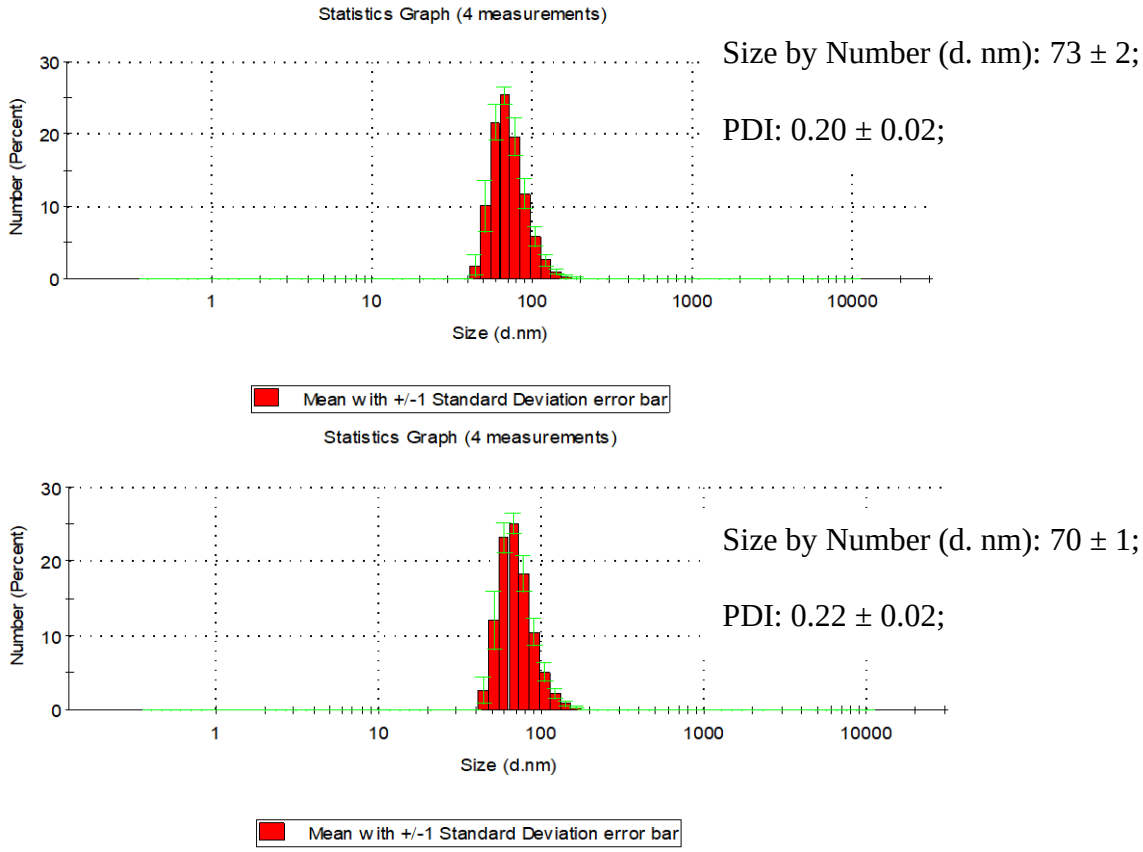


Figure S8. DLS size distribution data (Number) for method Rao et al. [68] with 0.018 M TEOS diluted in 10 mM phosphate-buffered saline pH 7.4 (up), and after 7 days (bottom).

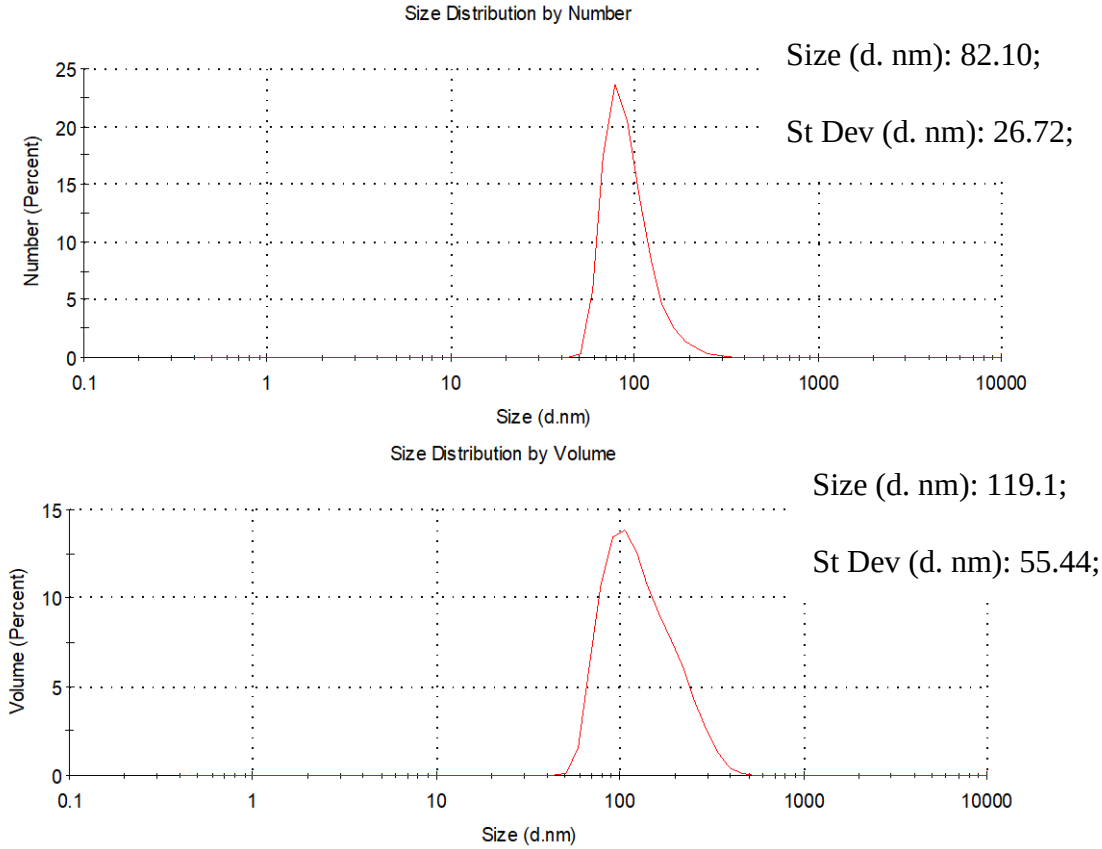


Figure S9. DLS size distribution data (Number, Volume) for method Rao et al. [68] with 0.018 M TEOS diluted in fetal bovine serum. The particle size was determined by the DLS method to be 82 ± 3 nm, with a PDI of 0.30 ± 0.01.

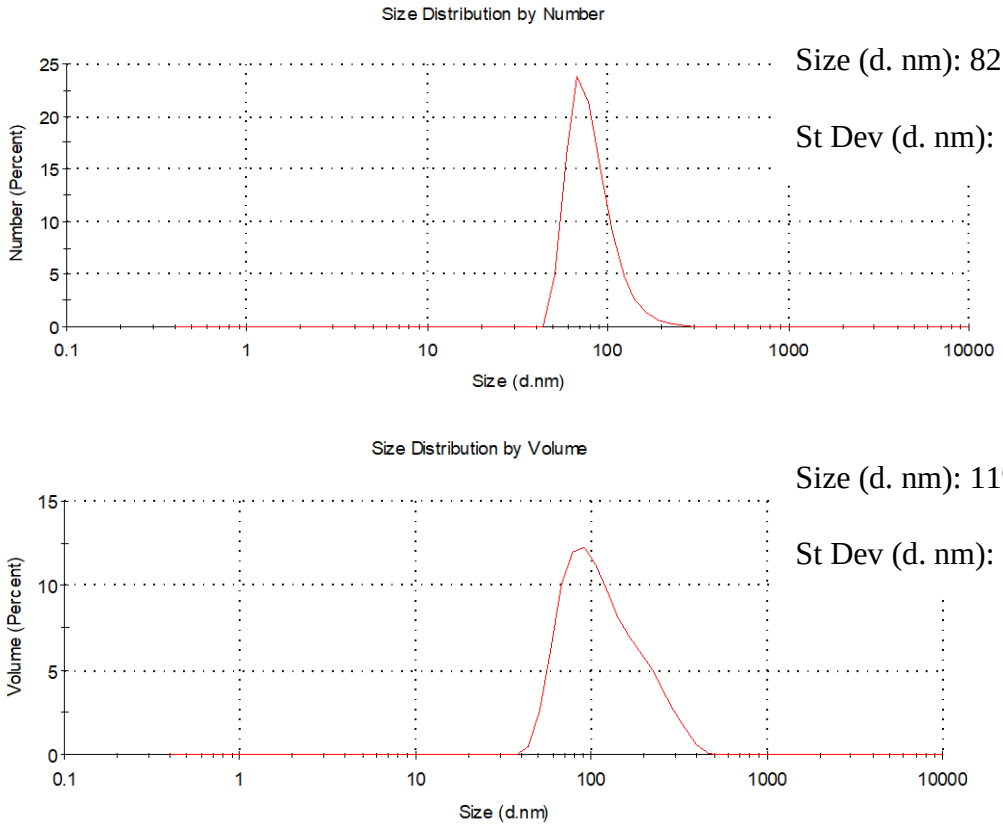


Figure S10. DLS size distribution data (Number, Volume) for method Rao et al. [68] with 0.018 M TEOS diluted in fetal bovine serum (after 10 days). The particle size was determined by the DLS method to be 80 ± 5 nm, with a PDI of 0.20 ± 0.01.

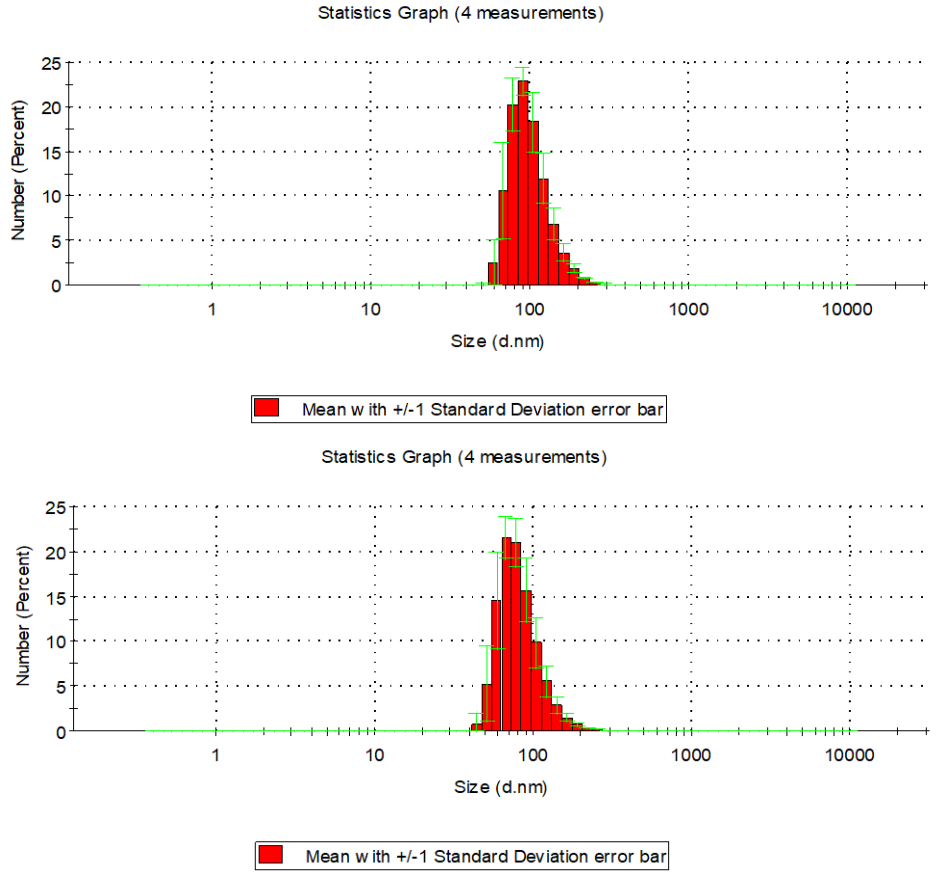
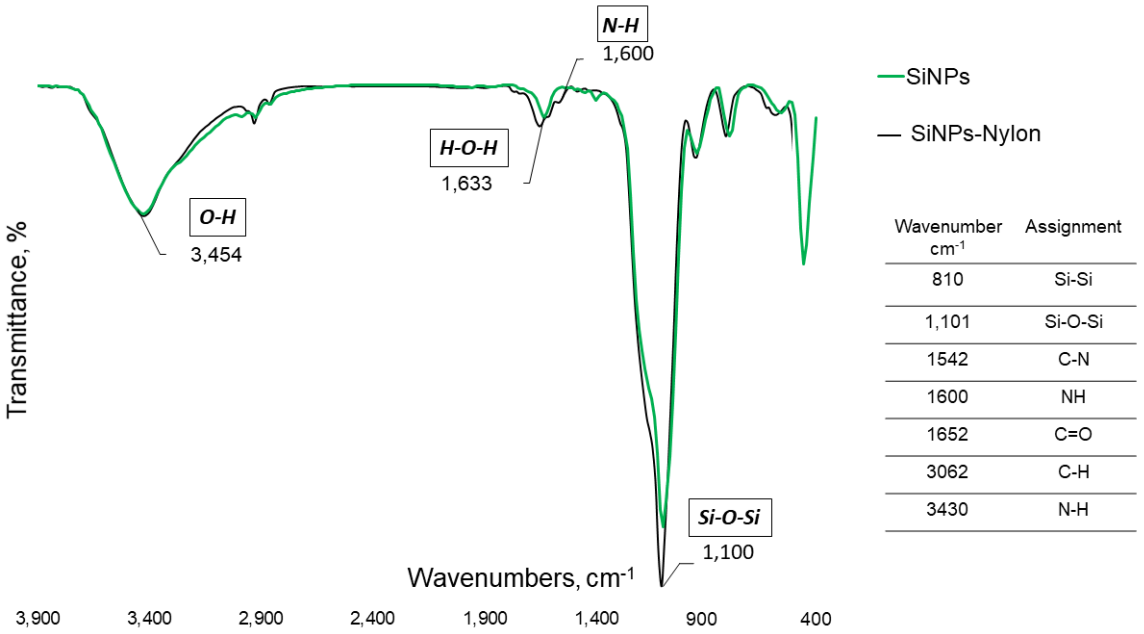


Figure S11. DLS size distribution data (Number) for method Rao et al. [68] with 0.018 M TEOS diluted in fetal bovine serum (up), and after 10 days (bottom).



Wavenumber cm^{-1}	Assignment
810	Si-Si
1,101	Si-O-Si
1542	C-N
1600	NH
1652	C=O
3062	C-H
3430	N-H

Figure S12. The FT-IR spectra of SiNPs and SiNPs-Nylon in KBr pellets using a Varian 640-IR-spectrometer (Varian, Louisiana, USA) in the range 400–4000 cm^{-1}.

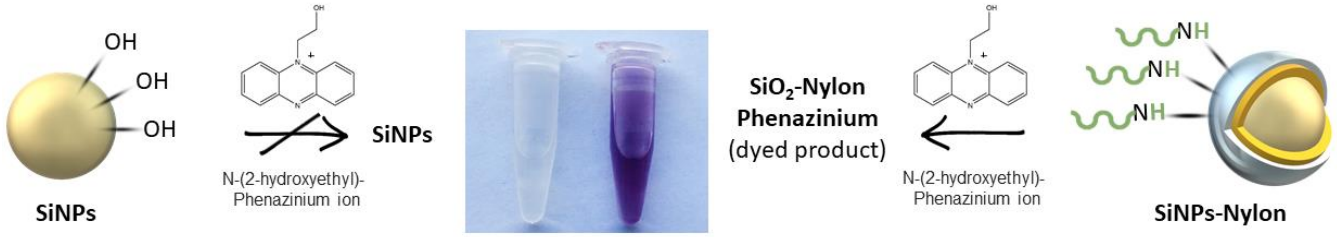


Figure S13. Scheme of the qualitative reaction of the nylon determination in SiNPs and SiNPs-Nylon with N-(2-hydroxyethyl)-Phenazinium ion. The reaction product is colored blue violet in the presence of amino groups. The initial SiNPs was used as a control.

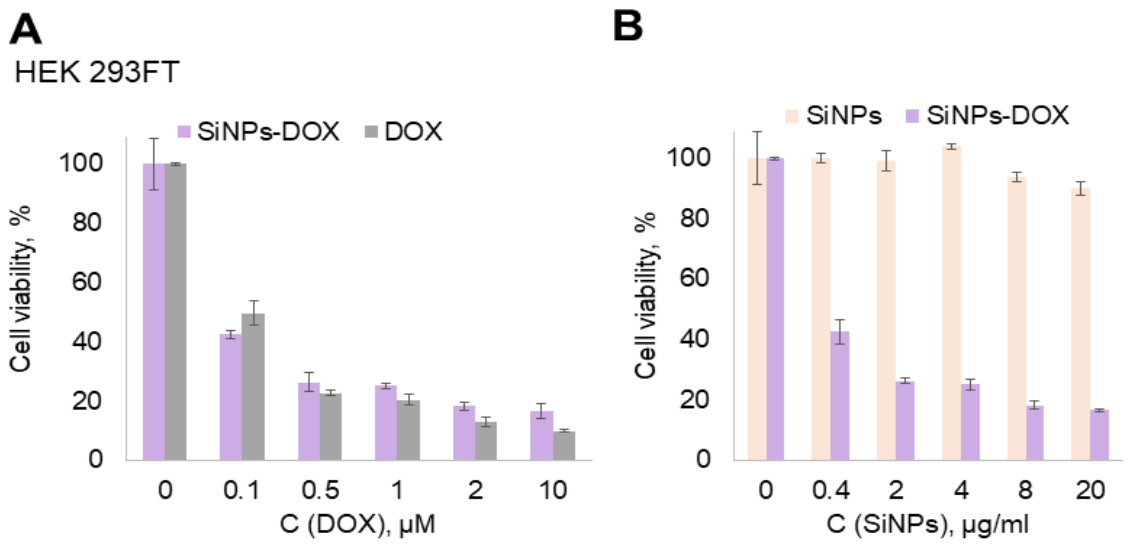


Figure S14. Cell viability assay. HEK 293FT cell line was incubated for 48 h with SiNPs, SiNPs–DOX, and DOX. Cells treated with PBS buffer were used as a 100% viability control. Cells were incubated with the same amount of free DOX or DOX loaded on SiNPs (A), or with the same mass of SiNPs and SiNPs–DOX (B). The IC50 values for SiNPs-DOX and DOX are 0.08 ± 0.01 μM and 0.10 ± 0.02 μM, respectively.