Electronic Supplementary Material (ESI) for RSC Advances.
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Growth curves of HeLa cells incubated with A-Si-NC, CQD, A-ND, or ND and of a control sample incubated without added nanomaterials.

Concentrations of nanomaterials in nutrient media were: A-Si-NCs – 8 μg/ml, ND – 8 μg/ml, CQD – 8 μg/ml, and A-ND – 4 μg/ml (these concentrations were chosen in order to assure approximately the same number of nanoparticles in all samples).

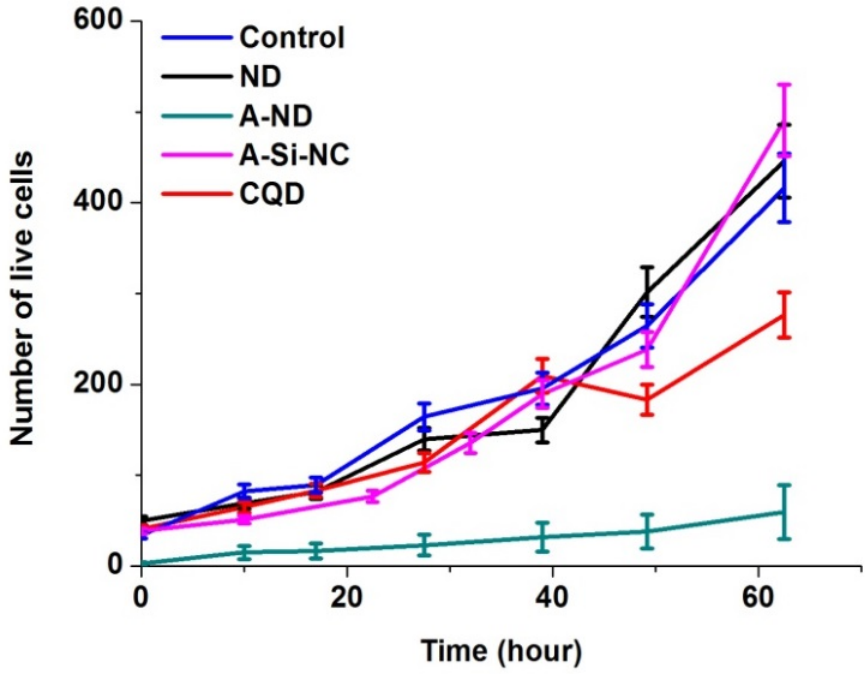

Fig. S1 Growth curves of HeLa cells incubated with A-Si-NC, CQD, A-ND, or ND and of a control sample incubated without added nanomaterials.

As we can see in Figure S1, the growth rate of the cells incubated with A-Si-NCs and NDs did not differ significantly from that of the control sample incubated without any nanomaterial. In case of CQD we observed slight decrease in number of cells compared to the control sample after 50 hours, this was probably due to the release of toxic compounds from CQD (mainly cadmium). Cells incubated with A-ND grew significantly worse compared to the control sample - the number of cells increased very slowly and after 60 hours the total number of cells incubated with A-ND was just on 1/10 of the control sample at the same time.

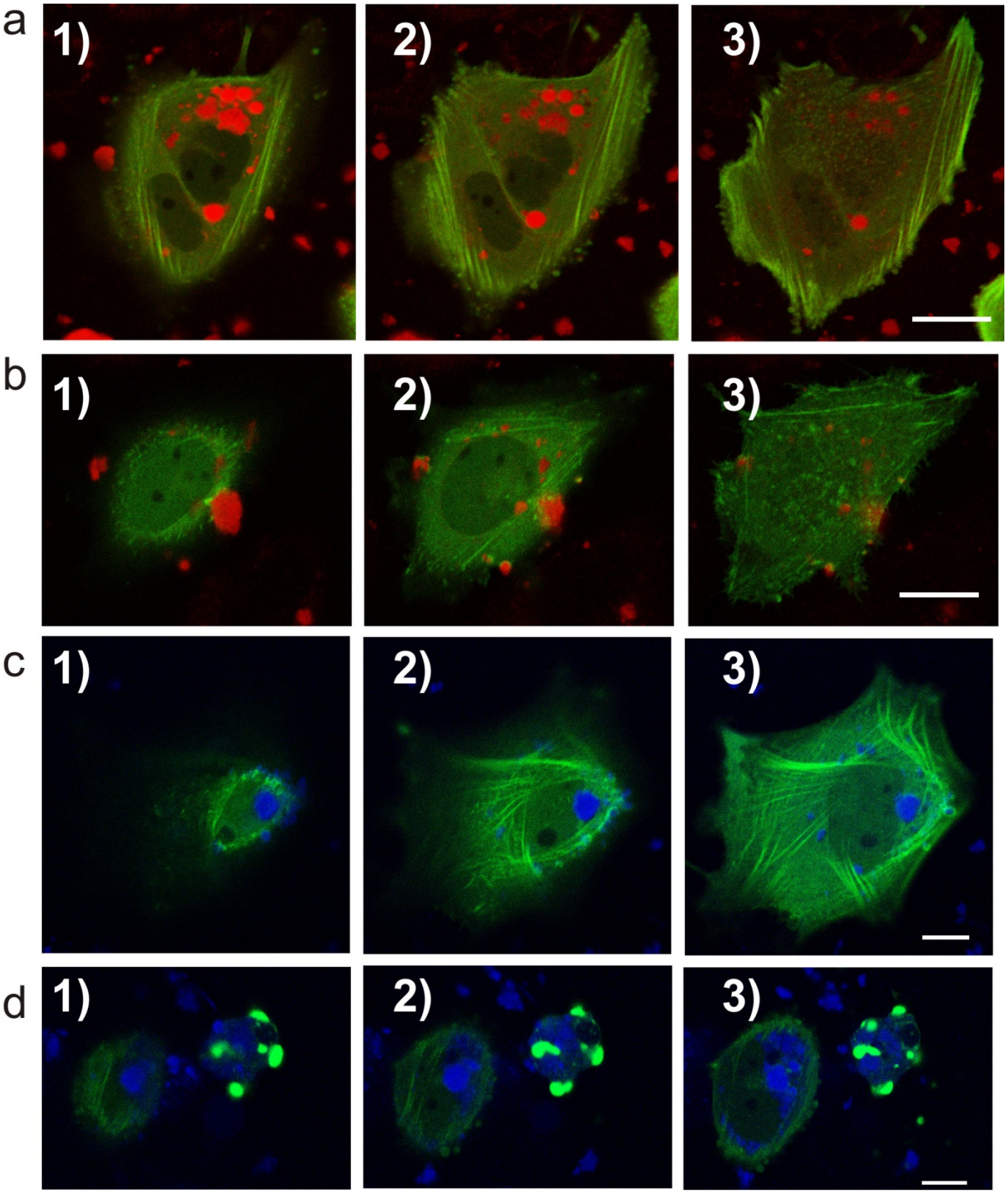

Fig. S2: High resolution confocal fluorescence microscopy images of horizontal cross-sections (1-top section, 2 – middle section, 3 – bottom section of the cell) of live SAOS-2 cells incubated with nanomaterials (75 μg/ml) (a) A-Si-NCs for 2 hours, (b) A-Si-NCs for 24 hours, (c) A-NDs for 2 hours, (d) A-NDs for 24 hours (the scale bar represents 10 μm). Color coding: green – actin, red – Si-NCs, blue – nanodiamonds.

Z-axis cross-section of cell 3D image

The presence of nanoparticles inside the cell was proven by detailed study of live cell cross sections which have been assembled to form 3D image, the cells have been studied from the time of administration up to 24 hours by confocal microscopy. Examples of cross sections are given below.

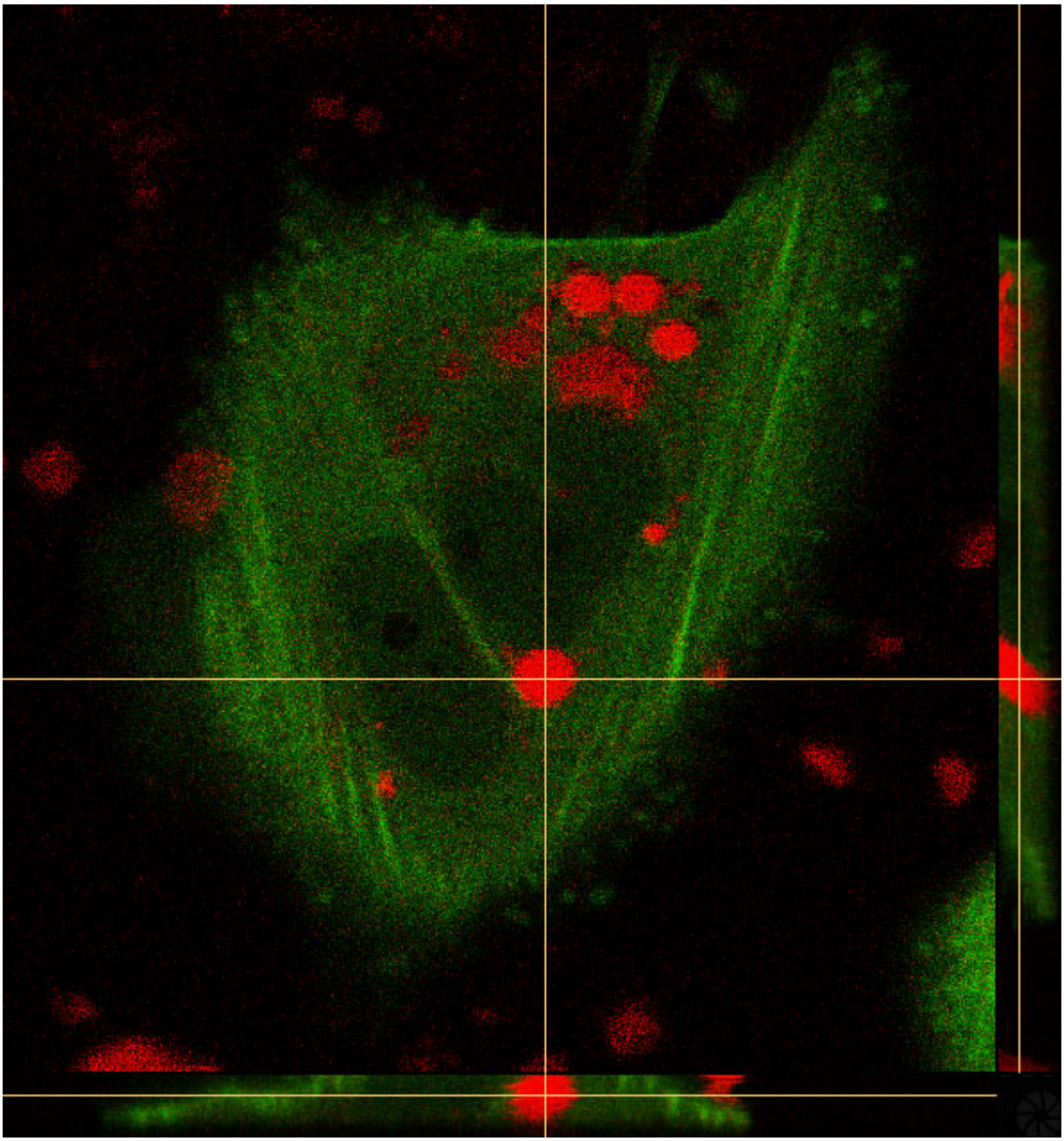

Fig. S3 Z-axis cross-section of 3D image assembled from horizontal confocal fluorescence microscopy images of SAOS-2 cell incubated with A-Si-NCs for 2 hours (concentration of nanomaterials 75 μg/ml).

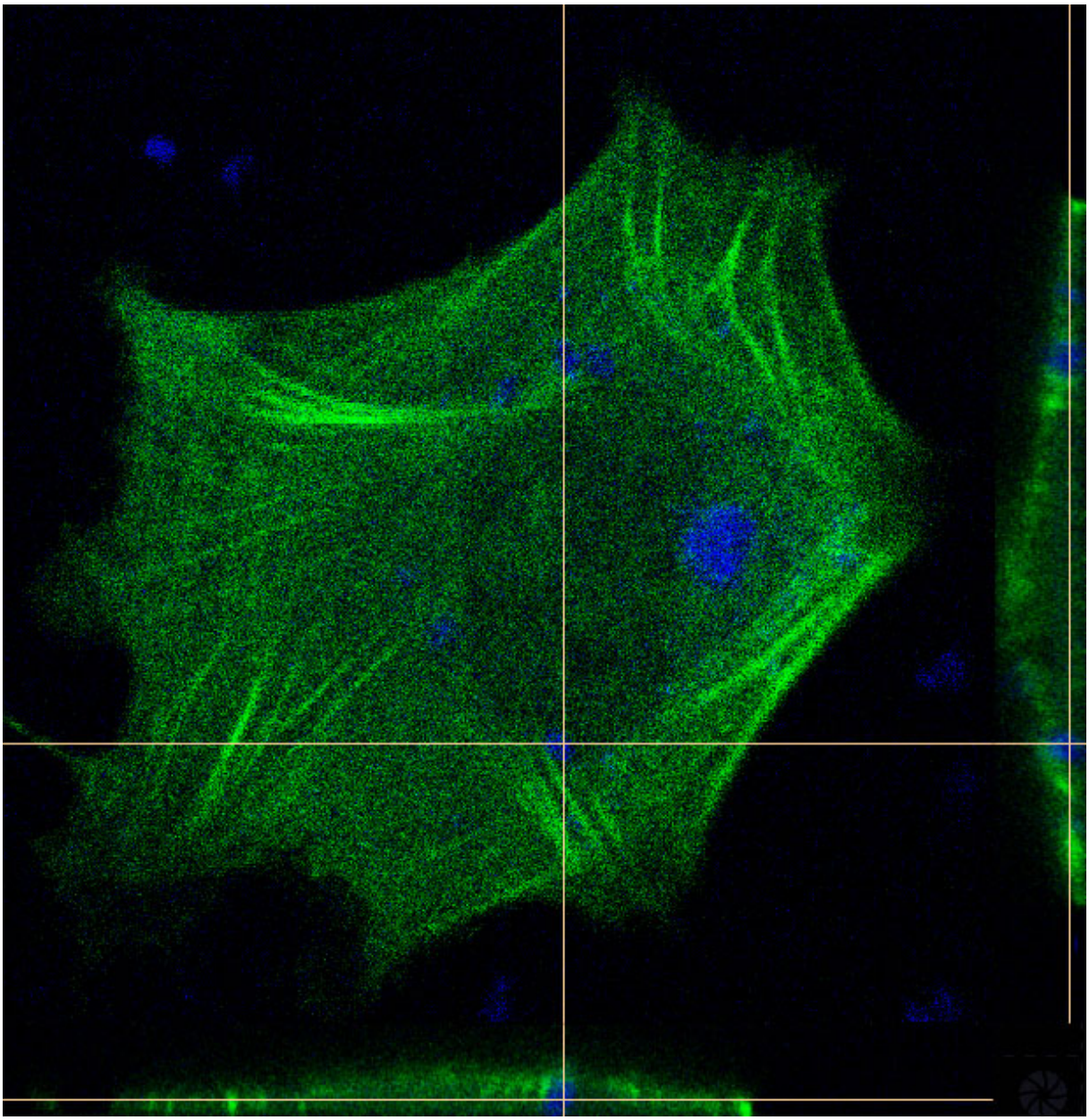

Fig. S4 Z-axis cross-section of 3D image assembled from horizontal confocal fluorescence microscopy images of SAOS-2 cell incubated with A-NDs for 2 hours (concentration of nanomaterials 75 μg/ml) .