

SUPPORTING INFORMATION

Complementary Imaging of Silver Nanoparticle Interactions with Green Algae *Raphidocelis subcapitata*: Dark-field Microscopy, Electron Microscopy and Nanoscale Secondary-Ion Mass Spectrometry

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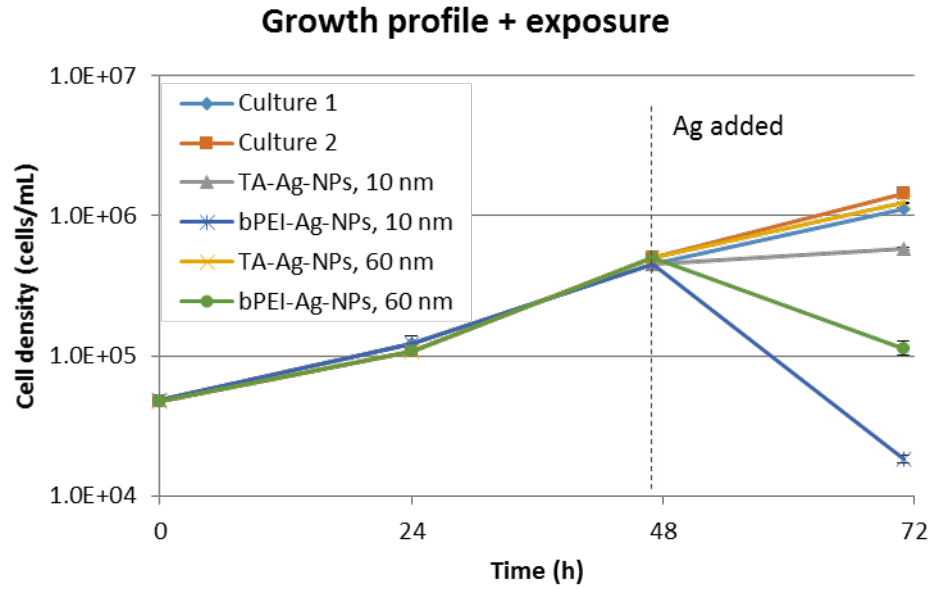


Figure S1. Growth profile of *R. subcapitata* exposed to 40 $\mu\text{g/L}$ Ag-NPs used for dark-field microscopy.

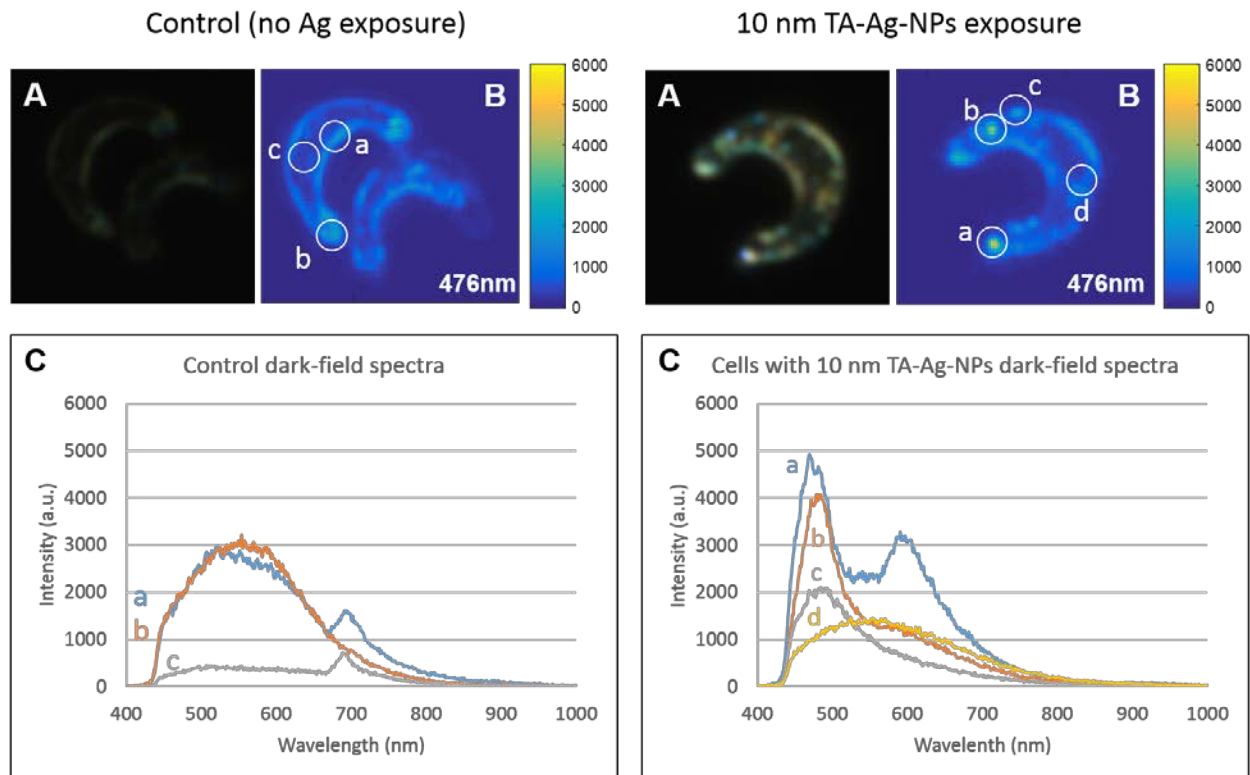


Figure S2. (A) Dark-field images, (B) dark-field intensity maps (measured at 476 nm) and (C) extracted dark-field spectra corresponding to the circled areas a to d in dark-field intensity maps. The peak at 680 nm is due to chlorophyll fluorescence.

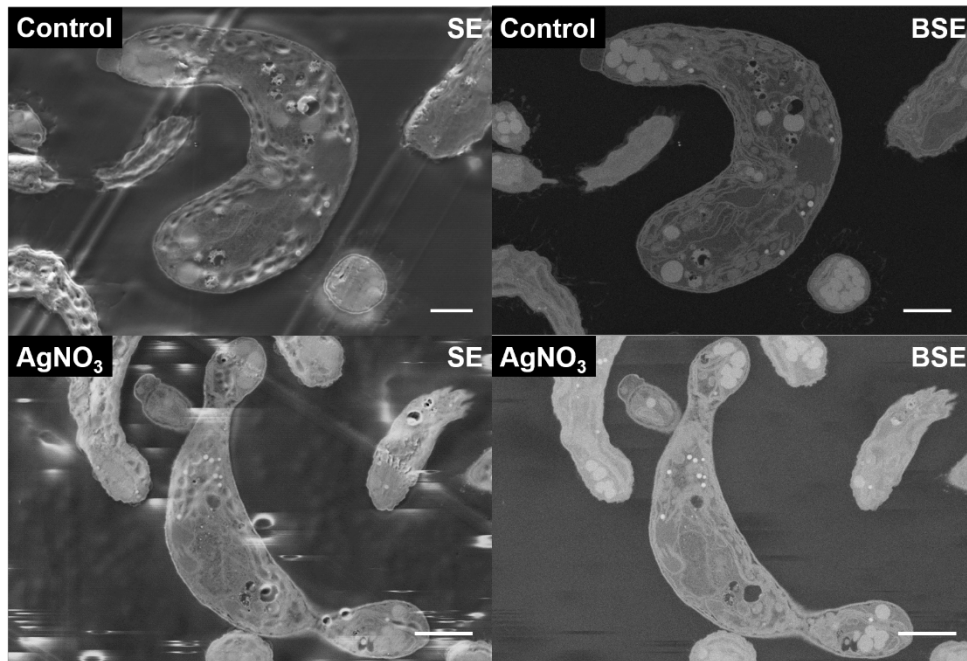


Figure S3. SEM images of algae cells for the control and AgNO₃-exposed treatments in secondary electron (SE) and backscattered electron (BSE) modes. Scale bar: 1 μ m, HV = 2 keV, WD = 4.9 – 7 mm.

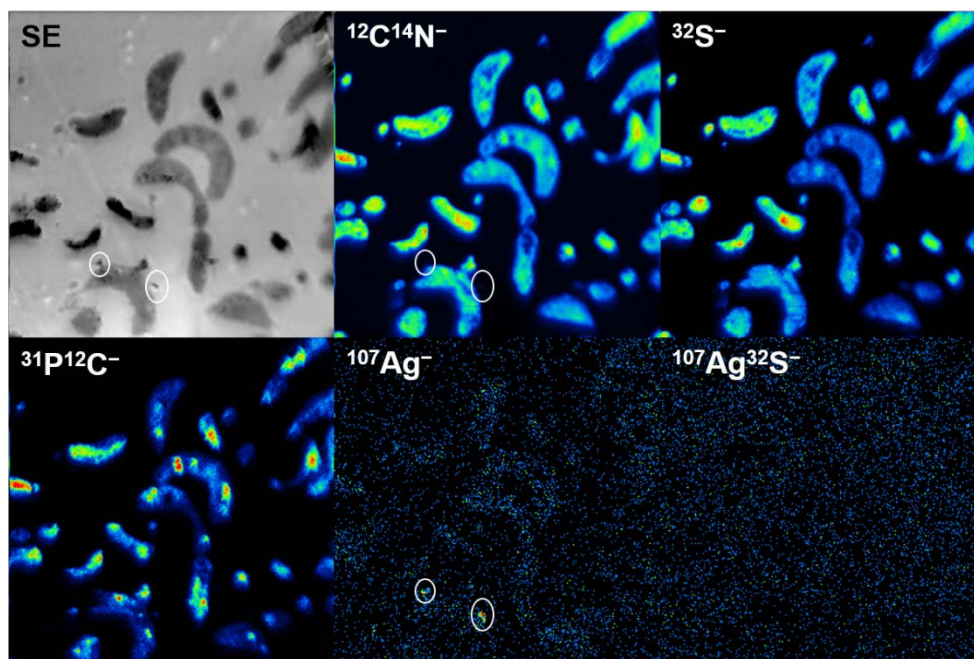


Figure S4. NanoSIMS images of algae cells for the control treatment. A uniform ¹⁰⁷Ag⁻ signal across the image correlates with the ¹²C¹⁴N⁻ map due to likely mass interference from ⁹⁵Mo¹²C⁻. The two intense spots indicated by circles in the ¹⁰⁷Ag image are not located inside cells and are likely to represent artefacts, seen as dark spots in the SE image. Each map is 30 μ m wide.

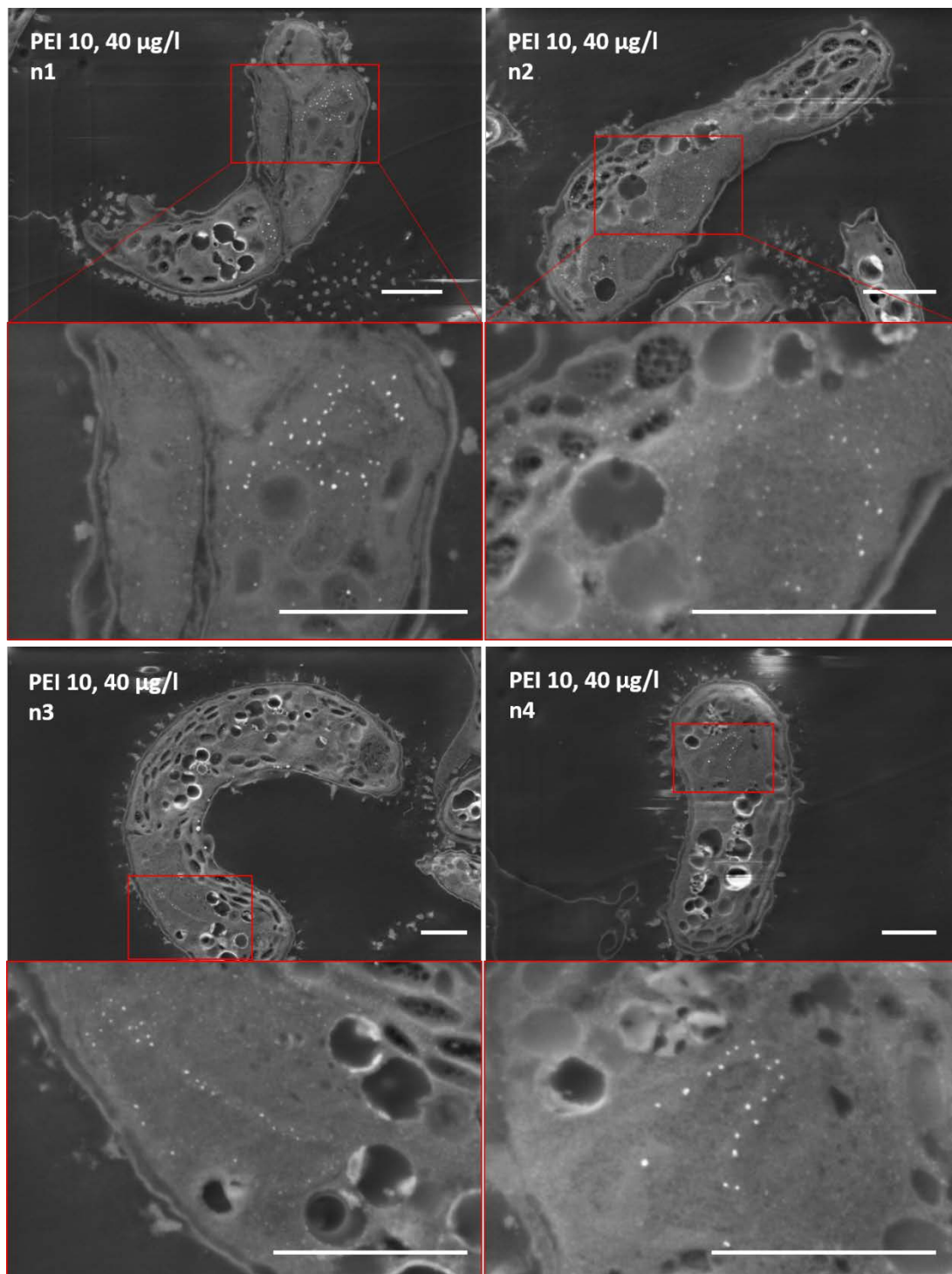


Figure S5. SEM images of *R. subcapitata* cells exposed to 10 nm bPEI-Ag-NPs at 40 µg/L showing nanoparticle-like features *inside* the cells. The cross sectional size of these “nanoparticles” are 17.2 ± 2.2 nm (N=6) and some are as large as 24.0 nm FWHM. Scale bars indicate 1 µm, SE mode, HV = 2 keV, WD = 4.7 mm.