Electronic Supplementary Material (ESI) for Nanoscale.

Supporting information

Laser-induced remote release *in vivo* in *C. elegans* from novel silver nanoparticles-alginate hydrogel shells

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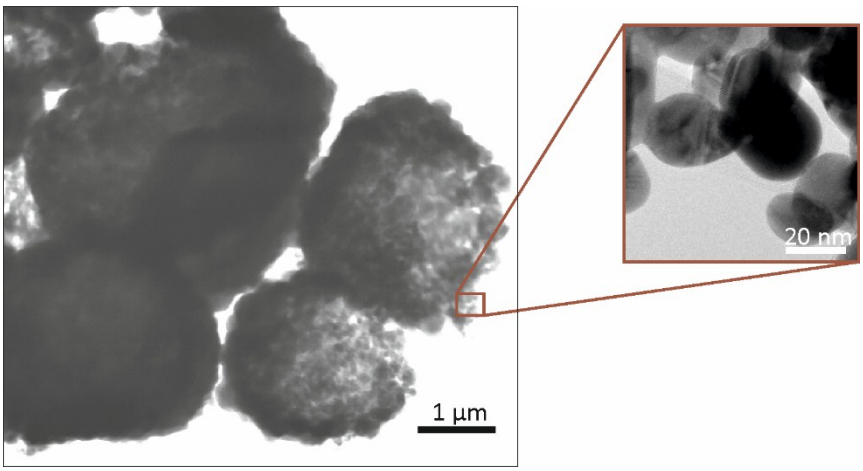

Fig. S1 BF STEM overview image of the hollow silver alginate shell and enlarged BF STEM image of silver nanoparticles.

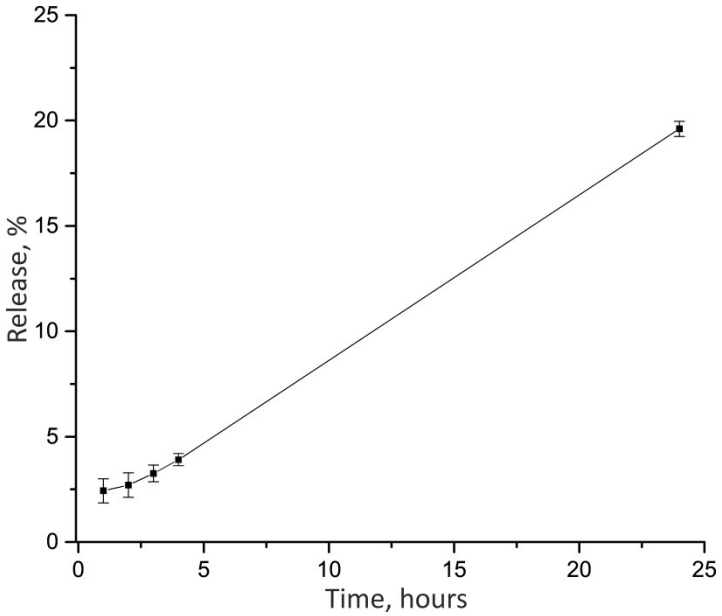

Fig. S2 The release profile of TRITC-BSA from containers.

The release of TRITC-BSA from microcontainers was estimated from spectrophotometric data obtained with Cary Eclipse (Varian, USA). For each release profile, 5 similar samples (one for each point in graph (Fig. S2)) of 8 mg of silver alginate containers suspension in 1 mL of water were placed into the 2 mL microcentrifuge tubes. These microtubes were placed in nutator for set periods of time (X axis on the graph). After this, the suspensions were sedimented via centrifugation and the concentrations (and corresponding masses, $M_{released}$) of released substance in supernatant solutions were measured as absorbance at 556 nm using the experimental calibration curve. The release ratio ($W_{release}$) was calculated as following, using known amount of loaded protein ($M_{loading}$) and amount of released TRITC-BSA ($M_{released}$)

$$W_{release} = \frac{M_{released}}{M_{loading}} \cdot 100\%$$

All measurements were performed in triplicates, hence the error bars in the graph.

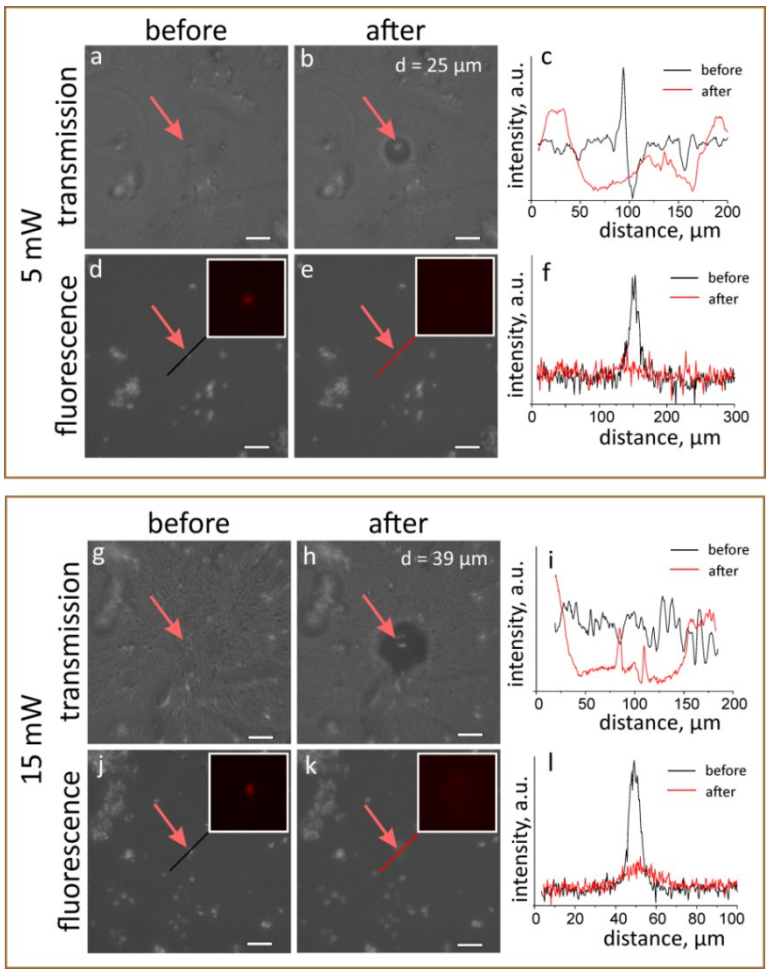

Fig. S3 Transmission (a, b, g, h) and fluorescence (d, e, j, k) microscopy images of silver alginate hydrogel shells on an agar plate before (a, d, g, j) and after (b, e, h, k) laser treatment with a laser operating at different intensities of 5 mW and 15mW, respectively. Their corresponding profiles along the lines depicted in (d, e, j, k) are presented in (c, f, i, l). The scale bars correspond to the 20 µm.

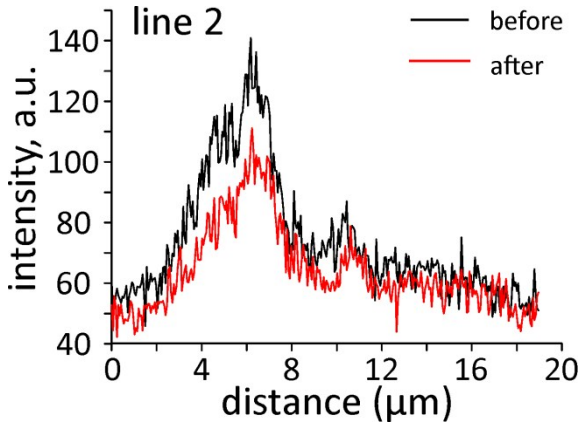

Fig. S4 Laser-triggered release of TRITC-BSA from microcontainers in *C. elegans*. Lines 2 region with the particles and laser treatment

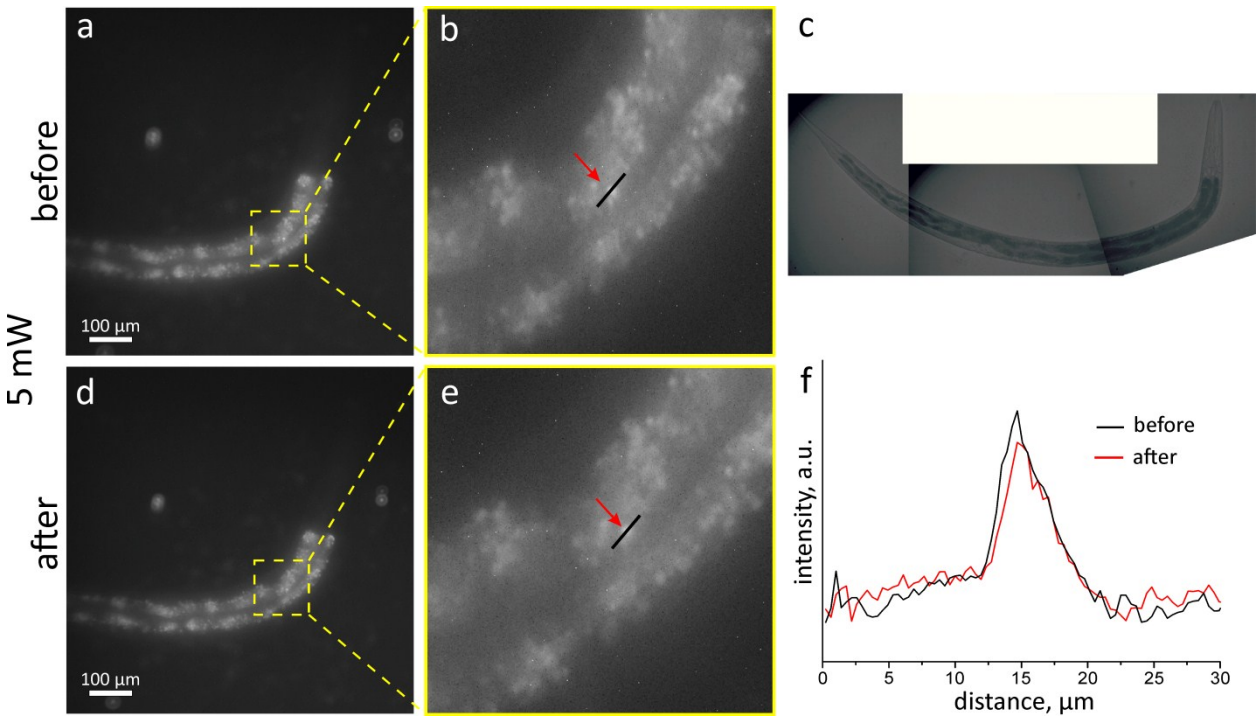

Fig. S5 Optical images *C. elegans* and of a same section of *C. elegans* with uptaken silver alginate shells possessing encapsulated TRITC-BSA before (a, b) and after (d, e) release, corresponding profile along the lines depicted in (f).

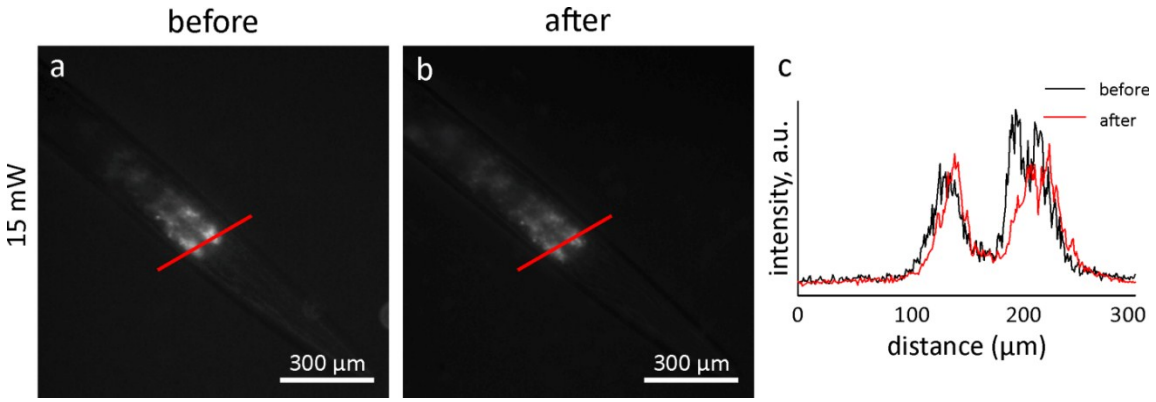

Fig. S6 Fluorescence microscopy images of a section of *C. elegans* before (a) and after (b) exposure to laser, showing that autofluorescence was present in the worm, but that it is not affected by 15 mW of laser exposure. Profiles drawn through red lines in (a) and (b) are shown in (c).