Electronic Supplementary Material (ESI) for Nanoscale Horizons.

Selenium-silk Microgels as Antifungal and Antibacterial Agents

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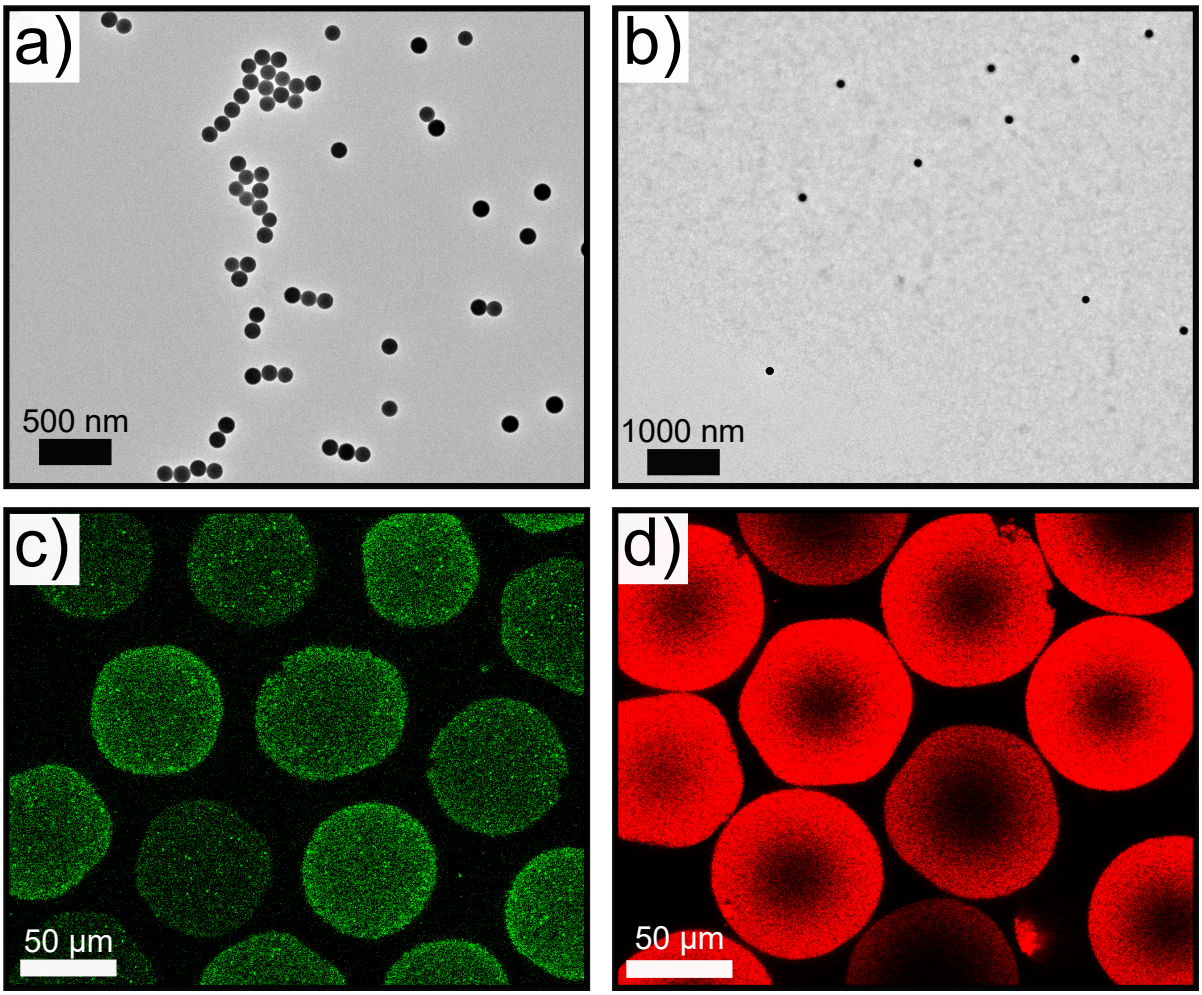


Figure 1: TEM micrographs for two samples: **(a)** 200 μg/mL SeNPs alone and **(b)** 200 μg/mL SeNPs with silk. SeNPs are dispersed throughout the silk fibrillar network. **(c-d)** Confocal images of selenium-silk microgels with Syto9 (green) and propidium iodide (red). Confocal images indicate that the microgels are approximately 70μm in diameter.

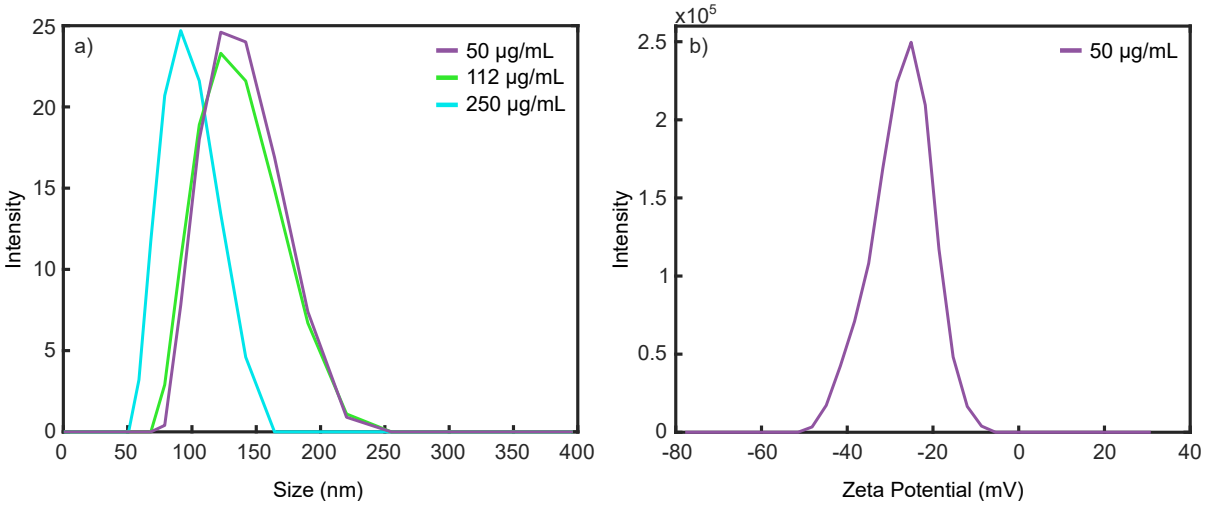


Figure 2: Dynamic light scattering data of the size distribution of SeNPs and the respective zeta potential values for the 50μg/mL.

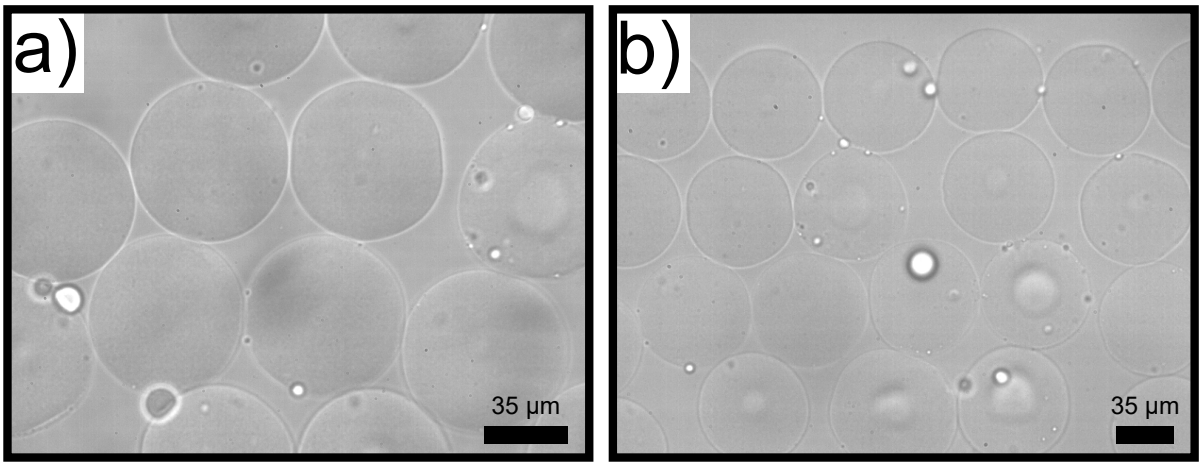


Figure 3: Optical microscopy images of de-emulsified selenium-silk microgels.

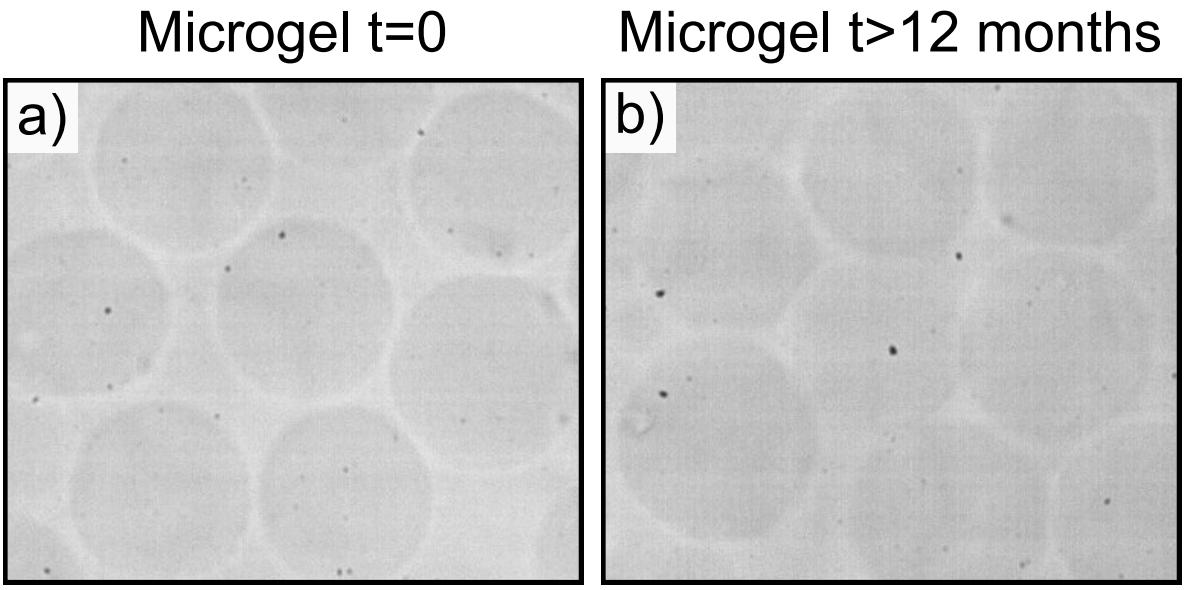


Figure 4: Optical microscopy images of microgels captured immediately following formation and after 12 months at room temperature.

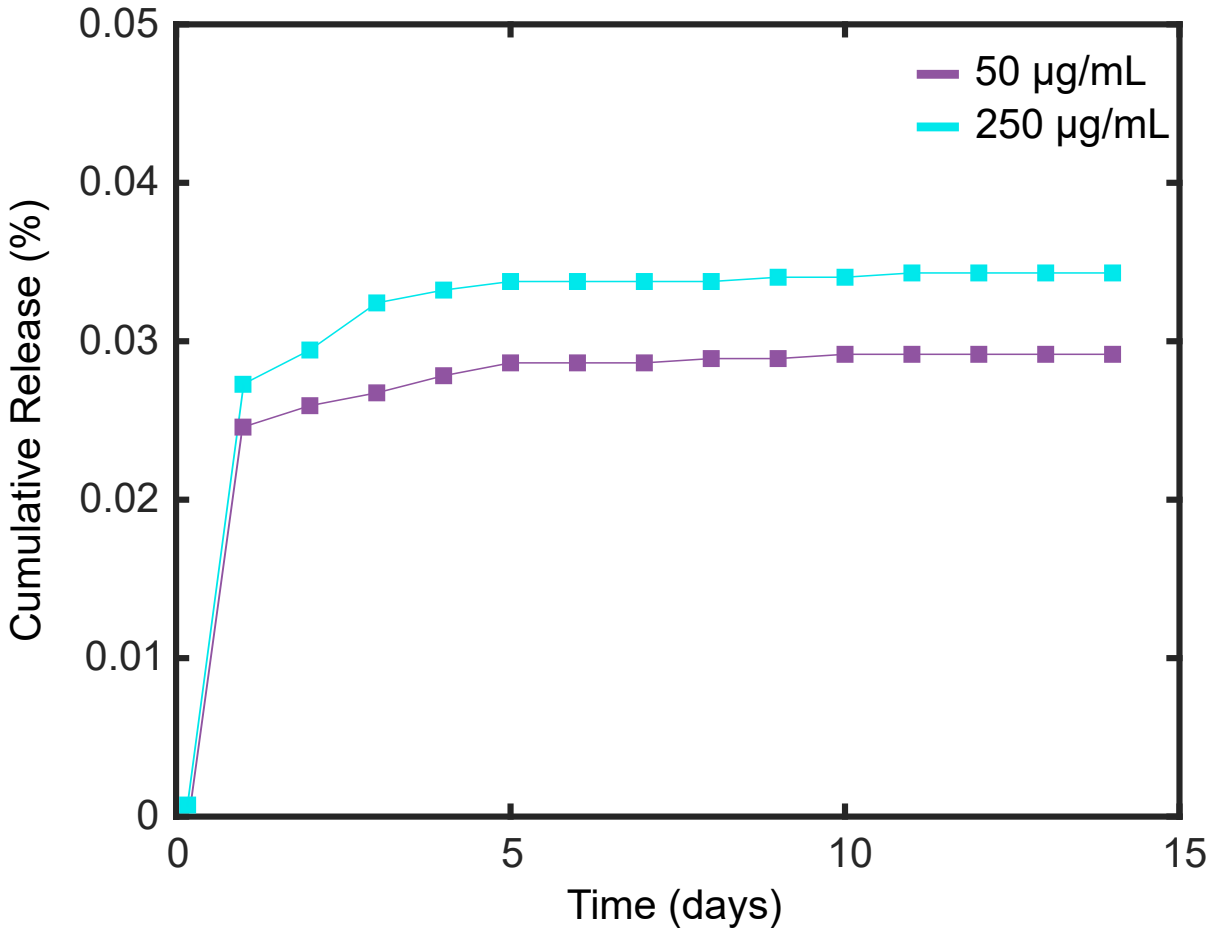


Figure 5: Cumulative release of nanoparticles from the microgels over a period of two weeks.

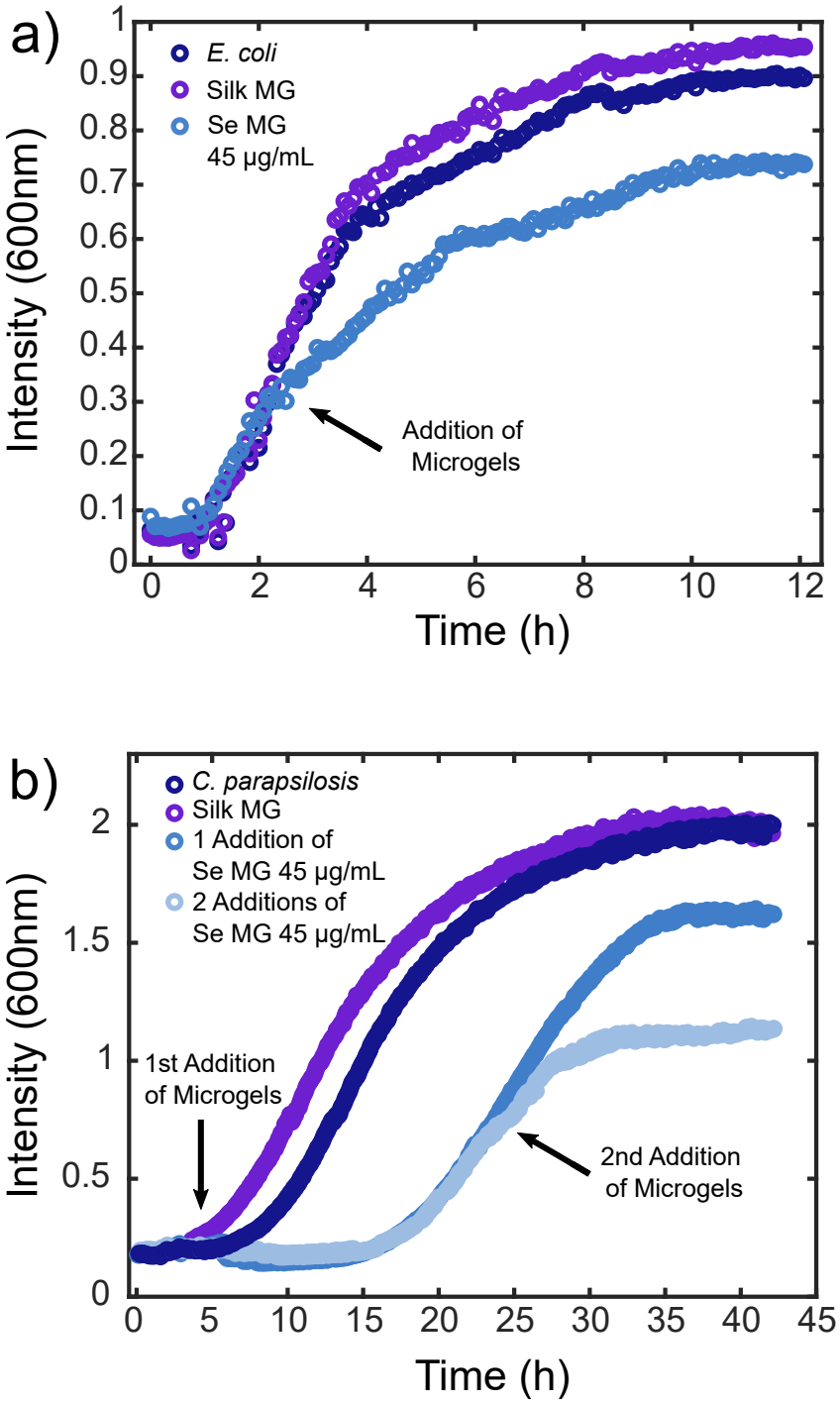
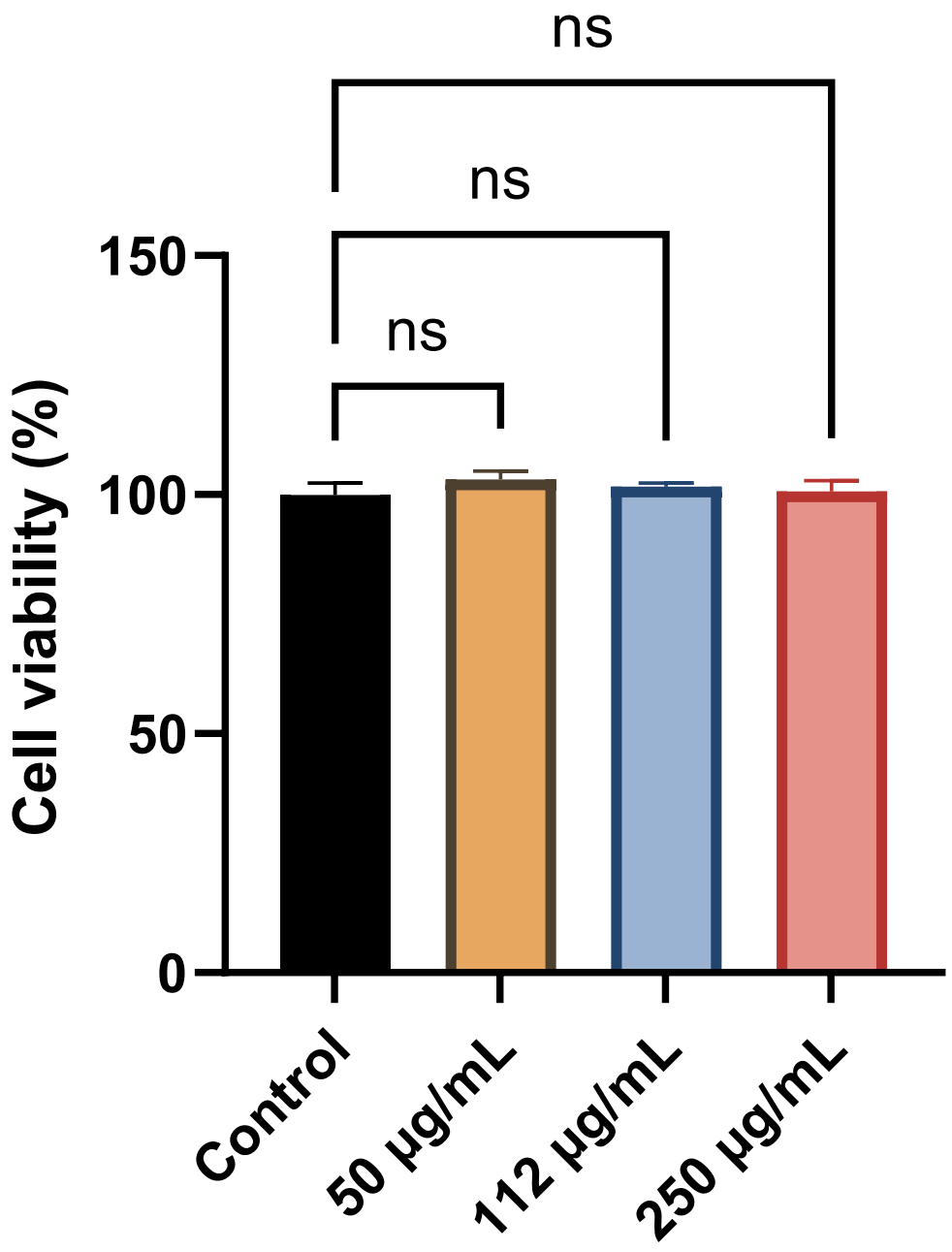


Figure 6: Kinetics of bacterial and fungal growth inhibition. Absorbance measurements were conducted at 600 nm for **(a)** *E. coli* **(b)** *C. parapsilosis*.



SeNP concentration within the microgels

Figure 7: MTT assay of selenium-silk microgels. The data show the mean ± SEM of at least n = 3 individual experiments. A one-way ANOVA test was conducted, and in all cases, no significant difference in viability between the control and the different microgel samples was observed. n.s. = not significant.