Electronic Supplementary Information

Analysing Intracellular Deformation of Polymer Capsules Using Structured Illumination Microscopy

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Fig. S1. TEM images of SiO$_2$ template particles: (A) spherical SiO$_2$ particles, $D=235$ (±30) nm; (B) cylindrical SiO$_2$ particles, 1550 (±120) × 150 (±30) nm. At least 150 particles were examined.

Fig. S2. AFM height profiles of PMA$_{SI}$ capsules: (A) spherical capsules and (B) cylindrical capsules. Scale bars are 0.5 µm. At least 30 capsules were examined.
**Fig. S3.** SIM images of the cellular co-localisation of AF633-fluorescently labelled spherical PMA$_{Si}$ capsules (red) inside (A) HeLa, (B) RAW and (C) dTHP-1 cells. After 24 h incubation, the cells were immunostained with anti-LAMP 1 antibody (green), which binds to lysosomes. Images represent a single z-plane image of cells. Scale bars are 3 µm.

**Fig. S4.** Covalent crosslinking of PMA$_{Si}$ polymer layers with different linking chemistries: (top) crosslinking of degradable disulfide bonds with chloramine T and (bottom) crosslinking of non-degradable thioether bonds with BM(PEG)$_2$. 
Fig. S5. SIM images of spherical non-degradable PMA$_{SH}$ capsules (red) in (A) HeLa, (B) RAW, and (C) dTHP-1 cells after 24 h incubation at 37 °C, 5% CO$_2$. Images represent a single z-plane image of cells. Cell membranes were stained with AF488 WGA (green). Scale bars are 2.5 µm.