Electronic Supplementary Information

Light-responsive polymer nanoreactor: A source of reactive oxygen species on demand

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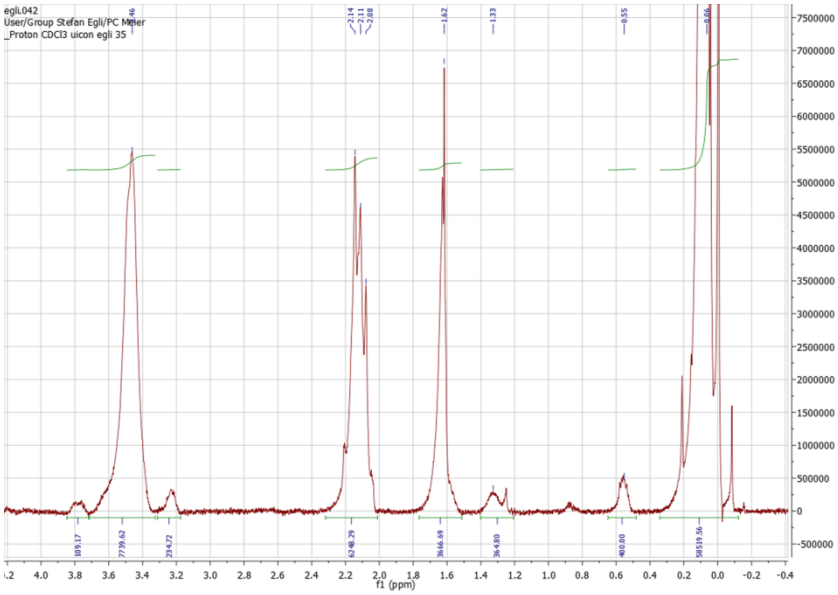

Fig. S1 1H-NMR spectrum of $PMOXA_{10}$-$PDMS_{87}$-$PMOXA_{10}$ polymer.

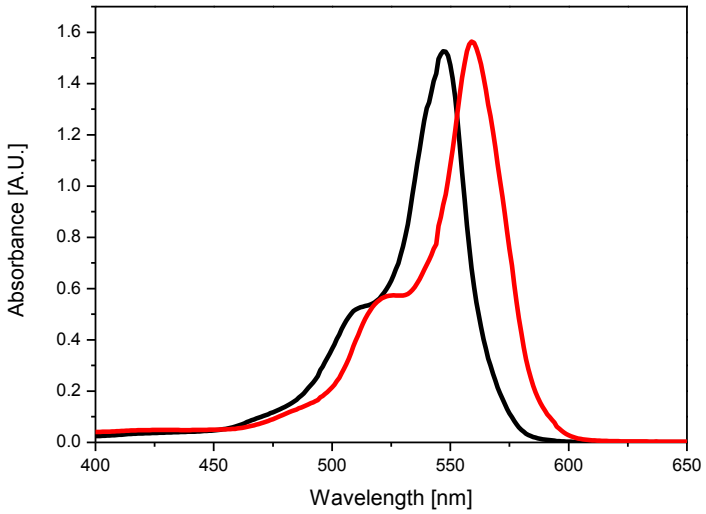

Fig. S2 UV-Vis spectrum of RB (black line), and RB-BSA conjugates after purification (red line) in PBS buffer.

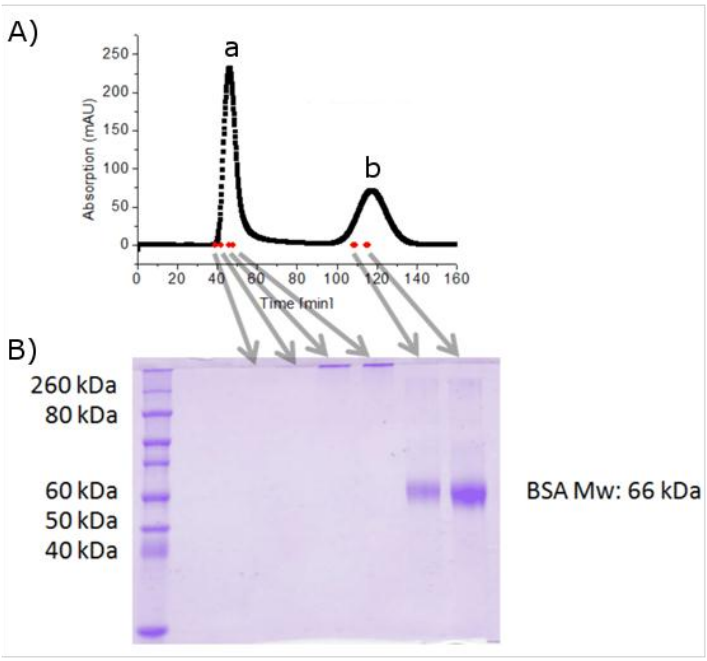

Fig. S3 A) UV (280 nm) chromatogram of the process that separates RB-BSA nanoreactors (a), and non-encapsulated RB-BSA (b). **B)** SDS PAGE of the fractions corresponding to Figure S2 A).

The absorbance measurement of the outflow indicated that the first peak containing the nanoreactors can be optimally separated from the second peak containing non-encapsulated RB-BSA conjugates. RB-BSA conjugates in the first fraction were able to be spectrophotometrically verified, while on a SDS PAGE no BSA was detected. Furthermore, the smeared bands of BSA are due to conjugation with RB, which lead to a larger distribution in the molecular weight compared to pure BSA, and also indicates the strong interaction between RB and BSA.

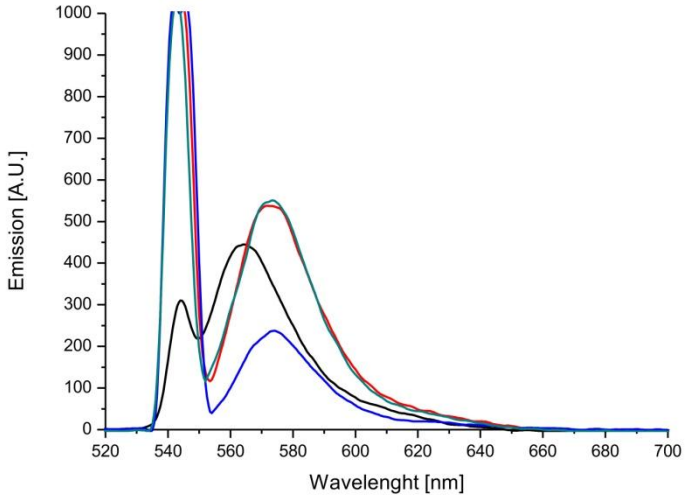

Fig. S4 Emission spectra of RB (black line), RB-BSA conjugate (red line), empty vesicles in presence of RB-BSA (green line) and nanoreactors with RB-BSA inside (blue line) measured in PBS buffer (excitation at 543 nm).

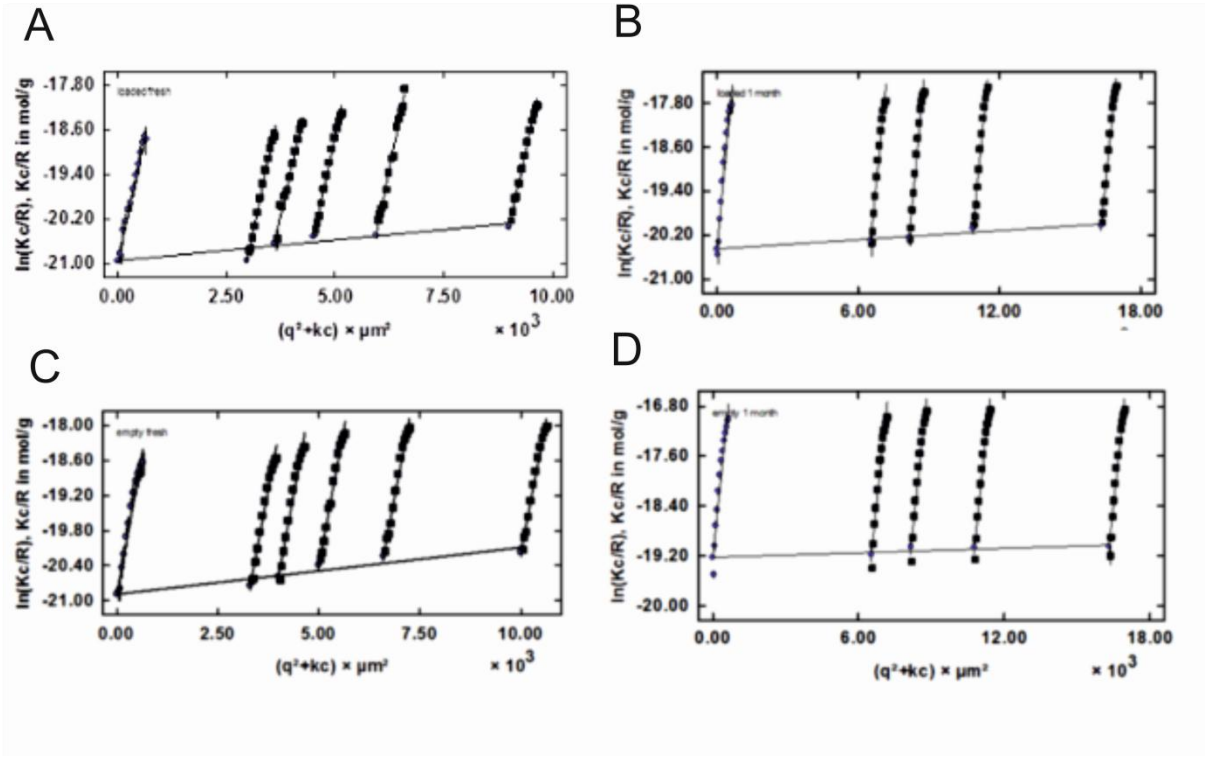

Fig. S5 Static light scattering Gunier plots of: **A)** freshly prepared RB-BSA nanoreactors, **B)** RB-BSA nanoreactors after one month, **C)** freshly prepared empty vesicles, and **D)** empty vesicles after one month.