Supplementary Information

A surprising system: Polymeric nanoreactors containing a mimic with dual-enzyme activity

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**Supplementary Information**

**Fig. S1** UV-VIS spectra. Empty PMOXA\textsubscript{12}-PDMS\textsubscript{55}-PMOXA\textsubscript{12} polymeric vesicles (black), and Cu\textsuperscript{II}ENZm-containing PMOXA\textsubscript{12}-PDMS\textsubscript{55}-PMOXA\textsubscript{12} vesicles in PBS (red).

**Fig. S2** Pulse radiolysis assay. Superoxide decay catalyzed by Cu\textsuperscript{II}ENZm encapsulated in PMOXA\textsubscript{12}-PDMS\textsubscript{55}-PMOXA\textsubscript{12} vesicles as function of the Cu\textsuperscript{II}ENZm concentration: 1) ca. 1.6 µM, 2) ca. 2.7 µM, 3) ca. 4 µM.
Fig. S3 Confocal images of THP-1 cells after 48 h incubation with sulforhodamine B and Cu\textsuperscript{II}ENZm co-encapsulated inside PMOXA\textsubscript{12}-PDMS\textsubscript{55}-PMOXA\textsubscript{12} vesicles. a) Internalized Cu\textsuperscript{II}ENZm- and sulforhodamine B-containing vesicles, shown in the red channel. b) THP-1 cells membrane stained with Deep Red, shown in the green channel. c) Overlay of the micrographs from the red and green channels.

Fig. S4 TEM images of an intracellular area of THP1 cells incubated with Cu\textsuperscript{II}ENZm-containing PMOXA\textsubscript{12}-PDMS\textsubscript{55}-PMOXA\textsubscript{12} vesicles for 24hrs. Black dots: Cu\textsuperscript{II}ENZm containing nanoreactors.
Fig. S5 LDH assay. The cytotoxicity of different concentration of: a) Cu$^{I	ext{I}}$ENZm, b) Cu$^{I	ext{I}}$ENZm nanoreactors (grey bars) and empty vesicles (black bars), respectively.