Electronic Supplementary Information (ESI)

Reduction-controlled substrate release from polymer nanosphere based viologen-cavitand

Elza D. Sultanova,^{*a,b*} Anna F. Atlanderova,^{*b*} Rezeda D. Mukhitova,^{*a*} Vadim V. Salnikov,^{*c,d*} Yuriy N. Osin,^{*c*} Albina Y. Ziganshina^{**a,b*} and Alexander I. Konovalov^{*a,b*}

^{a.}Department of Supramolecular Chemistry, A.E. Arbuzov Institute of Organic and Physical Chemistry, Kazan Scientific Center, Russian Academy of Sciences, Arbuzov str. 8, Kazan 420088, Russia. E-mail: az@iopc.ru.

^{b.}A.M. Butlerov Institute of Chemistry, Kazan Federal University, Kremlevskaya str. 18, Kazan 420018, Russia.

^{c.} Interdisciplinary Center of Analytical Microscopy, Kazan Federal University, Kremlevskaya str. 18, Kazan 420018, Russia.

^{*d.*}Kazan Institute of Biochemistry and Biophysics, Russian Academy of Sciences, Lobachevskii str. 2/31, Kazan 420008, Russia.



Fig. S1. Debye plots for (A) $p(MVCA-co-SS) C = 0.37 \div 7.4 \text{ mg/ml}$; (B) p(MVCA-co-SS) after addition of 1.2 mass equivalents of DTT $C = 0.44 \div 6.4 \text{ mg/ml}$ in H₂O.



Fig. S2. IR spectra of MVCA and *p*(MVCA-*co*-SS).



Fig. S3. ¹H NMR spectra of MVCA and p(MVCA-co-SS) (600 MHz, D₂O, T=303K).



Fig. S4. UV-vis and fluorescence spectra of Py ($C = 2 \mu M$), RhB (C = 0.02 mM) and Fl (C = 0.02 mM) after addition of 0 – 10 equivalents of MVCA-C5.



Fig. S5. Fluorescence spectra of Fl@*p*(MVCA-*co*-SS): (A) freshly prepared, (B) after 10 days storage (1 mg/ml, H₂O, room temperature).



Fig. S6. Size distribution diagram of *p*(MVCA-*co*-SS) (8 mg/ml) before and after addition of GSH (2.5 mg/ml) and DTT (9.3 mg/ml) determined by DLS (H2O, 25 °C).



Fig. S7. Fluorescence spectra of D (where D - Py, RhB or Fl), D@p(MVCA-co-SS) (1 mg/ml) and after addition of GSH (0.3 mg/ml).