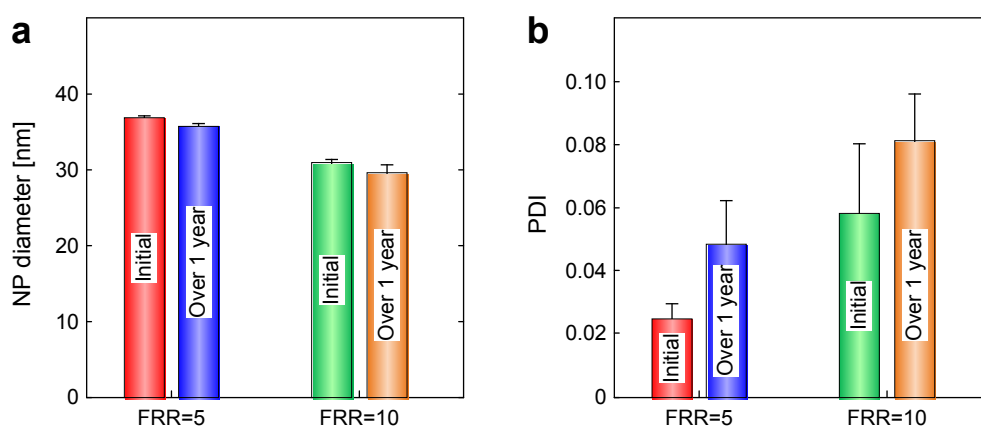


## Supporting Information

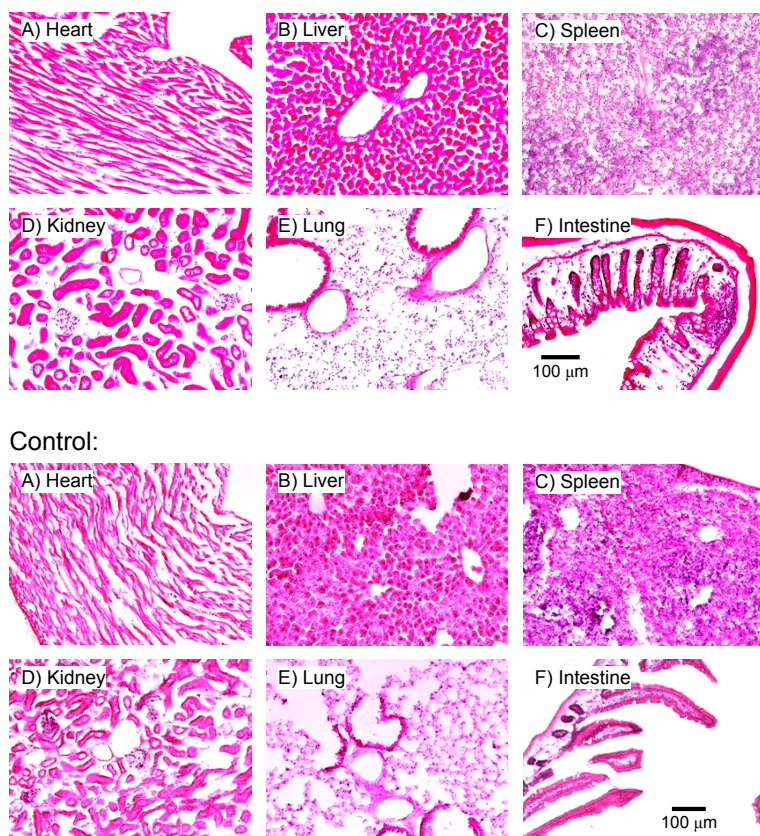
### Microfluidics-based single-step preparation of injection-ready polymeric nanosystems for medical imaging and drug delivery

Kegang Liu, Zhen Zhu,\* Xueya Wang, Daniel Gonçalves, Bei Zhang, Andreas Hierlemann, and Patrick Hunzike\*

#### Supplementary Figures and Tables



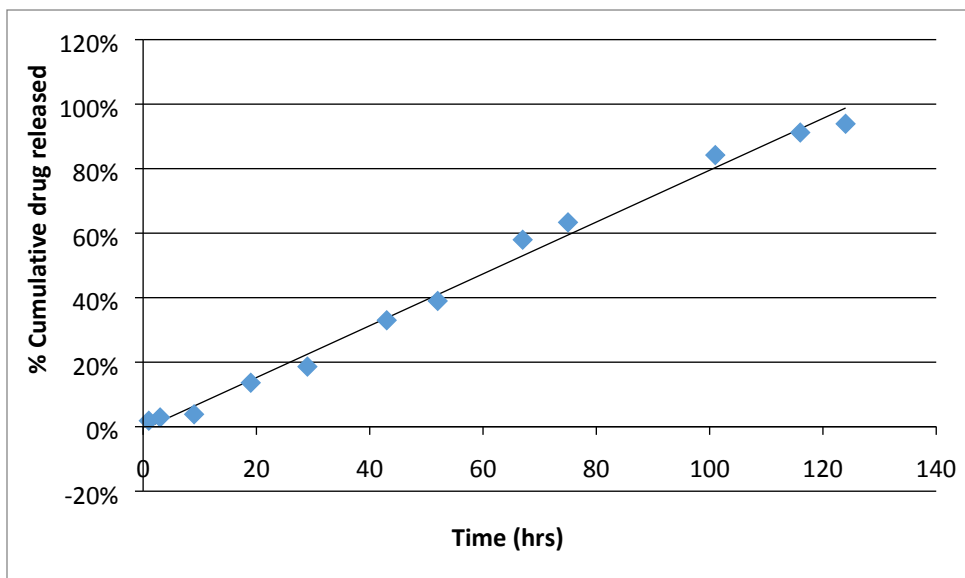
**Supplementary Figure S1:** The stability test of NPs stored for over one year. (a) Diameter and (b) corresponding PDI of the resulting NPs, which were prepared with copolymer OH-A<sub>12</sub>B<sub>73</sub>A<sub>12</sub>-OH (concentration of 25 mg/mL in ethanol) at *FRR*= 5 and 10.



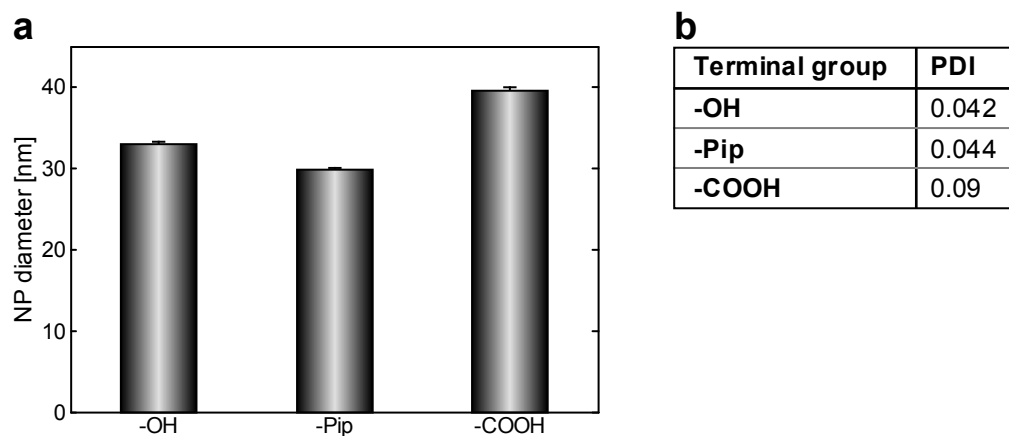
**Supplementary Figure S2:** Light microscopy analysis of organs recovered from animals treated with Pip-A<sub>7</sub>B<sub>73</sub>A<sub>7</sub>-Pip based NPs, 20 mg/kg and without NPs (control). A) heart, B) liver, C) spleen, D) kidney, E) lung, and F) intestine. The scale bar indicates 100  $\mu$ m.

**Supplementary Table S1.** Tamoxifen loading and micelle assembly from OH-B<sub>12</sub>A<sub>73</sub>B<sub>12</sub>-OH at a concentration of 25 mg/mL in EtOH

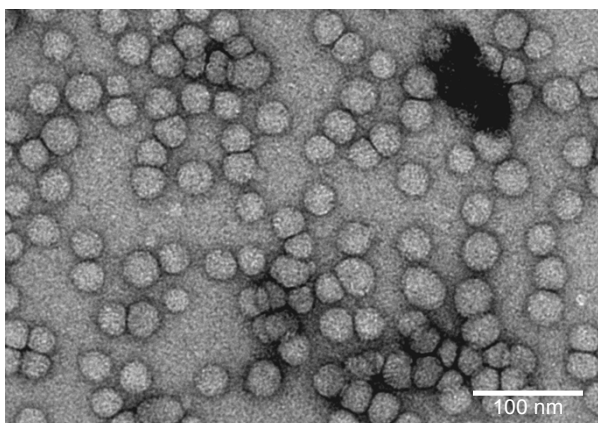
Tamoxifen /Copolymer [wt%]	<i>FRR</i>	Copolymer in ethanol [mg/mL]	Tamoxifen in assembly mixture [mg/mL]	Tamoxifen in Nanocarrier solution [mg/mL]	Loading efficiency [%]	Cargo per micelle in wt [%]
10	5	4.17	0.42	0.38	90	9.1
	7	3.13	0.31	0.25	81	8.0
	10	2.27	0.23	0.22	96	9.7
20	5	4.17	0.83	0.29	35	7.0
	7	3.13	0.63	0.29	46	9.3
	10	2.27	0.45	0.25	56	11.0
30	5	4.17	1.25	0.29	23	7.0
	7	3.13	0.94	0.26	28	8.3
	10	2.27	0.68	0.32	47	14.1



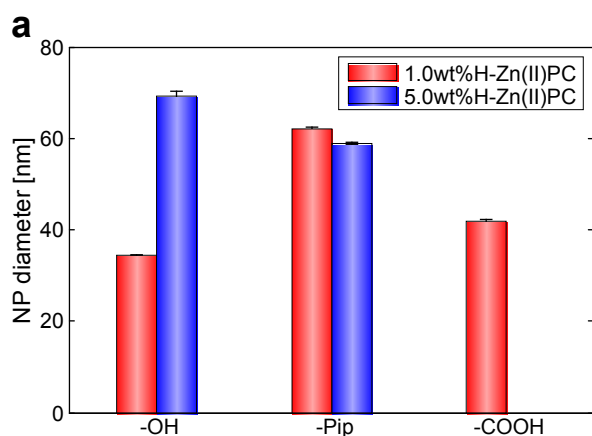
**Supplementary Figure S3:** *In vitro* release profiles of tamoxifen from tamoxifen-loaded NPs formulations in 1×PBS buffer (pH7.4).



**Supplementary Figure S4:** Size measurement of H-RhB encapsulated NPs, assembled in the microfluidic device using the copolymers OH-A<sub>7</sub>B<sub>73</sub>A<sub>7</sub>-OH, Pip-A<sub>7</sub>B<sub>73</sub>A<sub>7</sub>-Pip, and HOOC-A<sub>7</sub>B<sub>73</sub>A<sub>7</sub>-COOH, respectively. Concentration of copolymers in EtOH: 100 mg/mL. *FRR*=10.



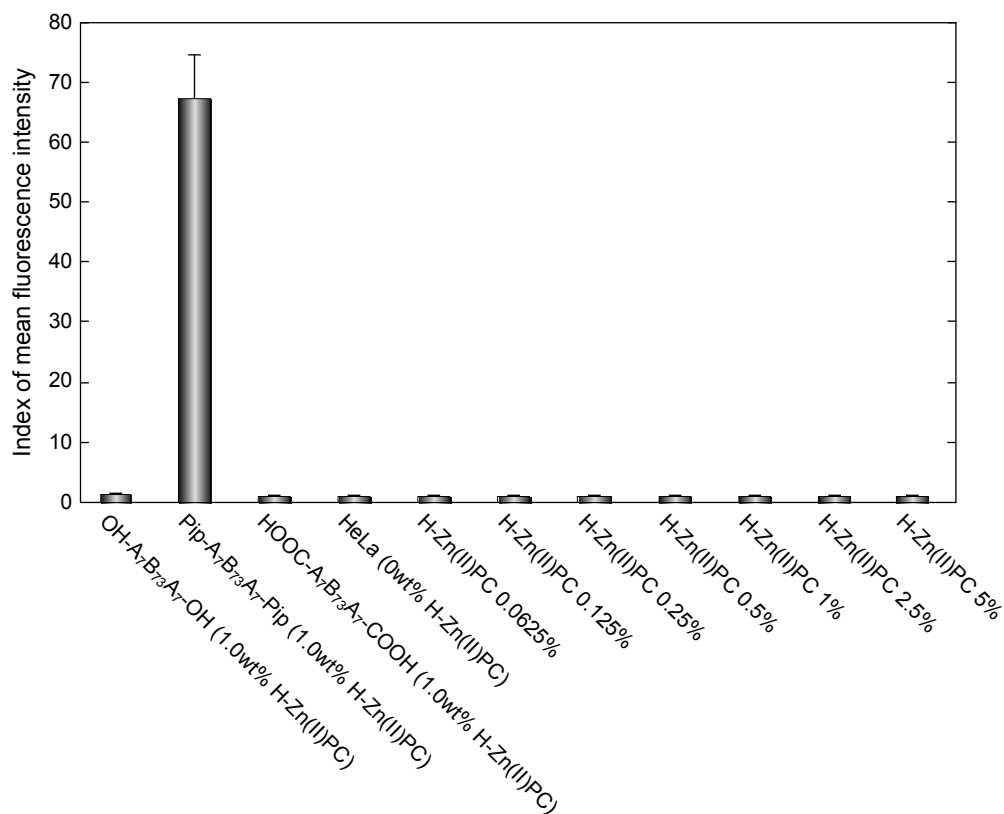
**Supplementary Figure S5:** Representative TEM micrograph of H-RhB-encapsulated NPs, assembled in the microfluidic device using the copolymer OH-A<sub>7</sub>B<sub>73</sub>A<sub>7</sub>-OH. Concentration of the copolymer in EtOH: 100 mg/mL. *FRR*=10. Scale bar: 100 nm



**b**

1.0wt% H-Zn(II)PC	PDI
-OH	0.019
-Pip	0.139
-COOH	0.072
5.0wt% H-Zn(II)PC	PDI
-OH	0.167
-Pip	0.183

**Supplementary Figure S6:** Size measurement of H-Zn(II)PC-encapsulated NPs, assembled in the microfluidic device using the copolymers OH-A<sub>7</sub>B<sub>73</sub>A<sub>7</sub>-OH, Pip-A<sub>7</sub>B<sub>73</sub>A<sub>7</sub>-Pip, and HOOC-A<sub>7</sub>B<sub>73</sub>A<sub>7</sub>-COOH, respectively. Concentration of copolymers in EtOH: 100 mg/mL. *FRR*=10.



**Supplementary Figure S7:** Binding assay of 1.0 wt% H-Zn(II)PC-labeled NPs and different concentrations of free H-Zn(II)PC in HeLa cells after 8-hour incubation as investigated by FACS. The PBS buffer without micelles was set as blank and its index of fluorescence intensity was set to 1. The value of the index of mean fluorescence intensity refers to per cell.