

**Table S1** Fluorescent thermometers showing temperature-dependent fluorescence (emission) intensity ratios at two different wavelengths in aqueous media.

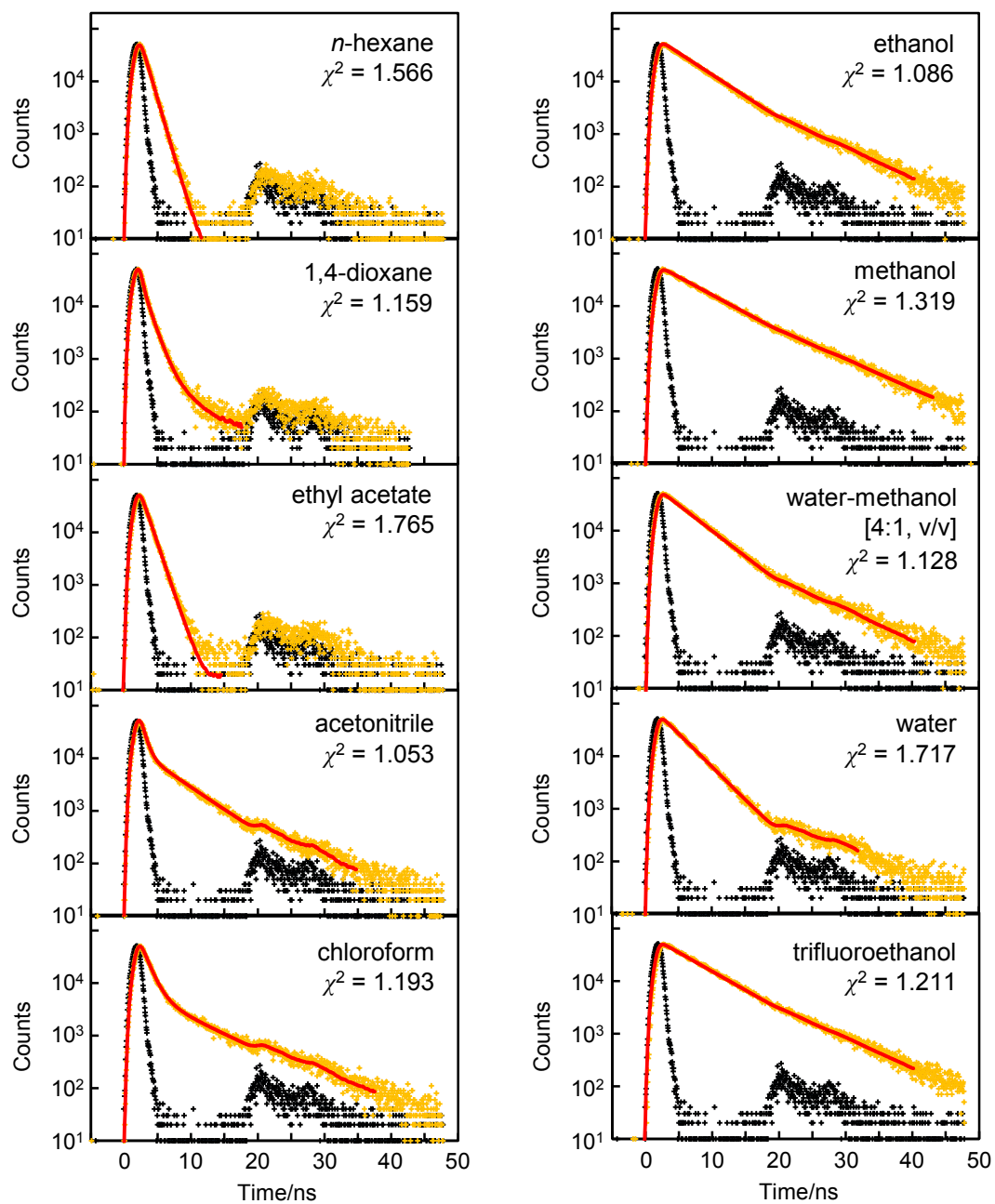
fluorescent thermometer <sup>a</sup>	medium	excitation /nm	emission /nm	functional temperature range/°C	sensitivity /%C <sup>-1</sup>	ref
<i>fluorophore(s)-labeled thermo-responsive polymers</i>						
poly(NIPAM-co-MBC-AA)	water	345	470, 520	32–38	15.0	this work
Thermo-3HF	water	355	~430, ~530	32–48	11.3	S1
PNDP-NR	water	405	470, 625	32–55	11.2	S2
P(St-co-NBDAE) <sub>20</sub> -b-P(NIPAM-co-RhBHA) <sub>54</sub>	water + Hg <sup>2+</sup>	470	518, 585	25–40	9.5	S3
P(NIPAm-NBD-NSVB)-TfAuNCs	water	488	545, 659	31–41	6.9	S4
hybrid silica nanoparticle coated with P(NIPAM-co-NBDAE)-b-P(NIPAM-co-SPMA)	water	480	530, 618	20–35	4.6	S5
Ru0.2Cy0.4 microgel	phosphate buffer (pH 7.4)	454	610, 670	28–40	4.4	S6
P(NIPAM-co-FITC) <sub>36</sub> -b-P(OEGMA-co-RhBAM) <sub>90</sub>	water (pH 5.5)	495	522, 582	30–60	4.2	S7
poly(NNPAM-co-APTMA-co-DBThD-AA-co-BODIPY-AA)	150 mM KCl solution	458	515, 580	25–45	4.1	S8
poly(DEGMA-stat-PyMMA)	water	342	395, 467	5–30	3.4	S9
<i>fluorophore(s)- and/or lumophore(s)-containing polymer nanoparticle</i>						
PS-RNT	PBS	390	506, 610	25–46	4.2	S10
RNT	PBS	360, 530	590	26–40	3.2	S11
Eu <sup>3+</sup> and Tb <sup>3+</sup> complexes coated with P4VP-b-P(PMEGA-co-PEGA)	water	365	545, 615	24–37	2.0	S12
<i>emissive inorganic nanoparticle</i>						
Qdot® 655	cell culture medium	405	640, 660	31–41	5.1	S13
Zn <sub>1-x</sub> Mn <sub>x</sub> Se/ZnS/CdS/ZnS nanocrystal encapsulated by <i>n</i> -octylamine-modified poly(acrylic acid)	water	405	~480, ~580	22–97	3.1	S14
UCLNP-III	water	980	523, 541	20–60	1.2	S15
NaYF <sub>4</sub> :Er <sup>3+</sup> , Yb <sup>3+</sup> nanoparticle	water	920	525, 545	26–63	1.0	S16
CaF <sub>2</sub> :Tm <sup>3+</sup> , Yb <sup>3+</sup> nanoparticle	PBS	920	790, 800	26–46	0.26	S17

<sup>a</sup> names are as described in the original reports.

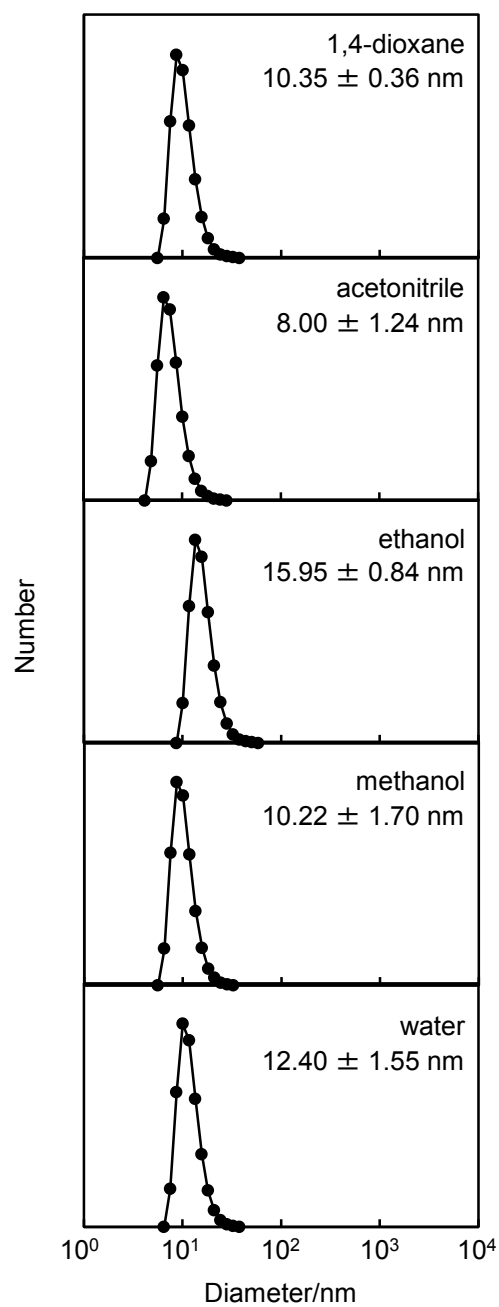
**Table S1** (continued).

fluorescent thermometer <sup>a</sup>	medium	excitation /nm	emission /nm	functional temperature range/°C	sensitivity /%C <sup>-1</sup>	ref
<i>small organic molecules</i>						
Mito-RTP <i>GFP</i>	PBS <sup>b</sup>	563, 722	587, 756	25–43	2.7	S18
tsGFP	PBS	400, 480	510	20–50	1.3	S19
<i>Others</i>						
silica-coated and Eu-DT/OASN- doped nanoparticle	water	400	498, 614	10–50	3.9	S20
CdSe-CdS quantum dot-quantum rod	buffer (pH 8.3)	610	635, 669	20–40	2.0	S21
PFBT-RhB	water	450	510, 573	10–70	1.7	S22

<sup>a</sup> names are as described in the original reports. <sup>b</sup> containing 5 % ethanol.



**Fig. S1** Fluorescence decay curves of MBC-IA (10  $\mu\text{M}$ ).  
Excitation: 370 nm; Emission:  $\lambda_{\text{em}}$ .



**Fig. S2** Size distribution of poly(NIPAM-co-MBC-AA) (0.01 w/v%) examined by DLS measurements in 1,4-dioxane, acetonitrile, ethanol, methanol, and water at 20 °C. The indicated values are the means  $\pm$  standard deviations.

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