Supporting Information

Optical temperature-sensing phosphors with high sensitivities in a wide temperature range based on different strategies

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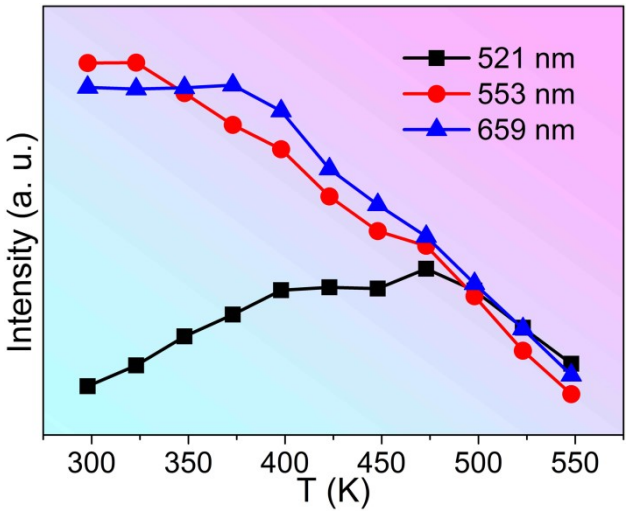

Fig. S1 Dependences of intensities of 521, 553 and 659 nm emissions on absolute temperature

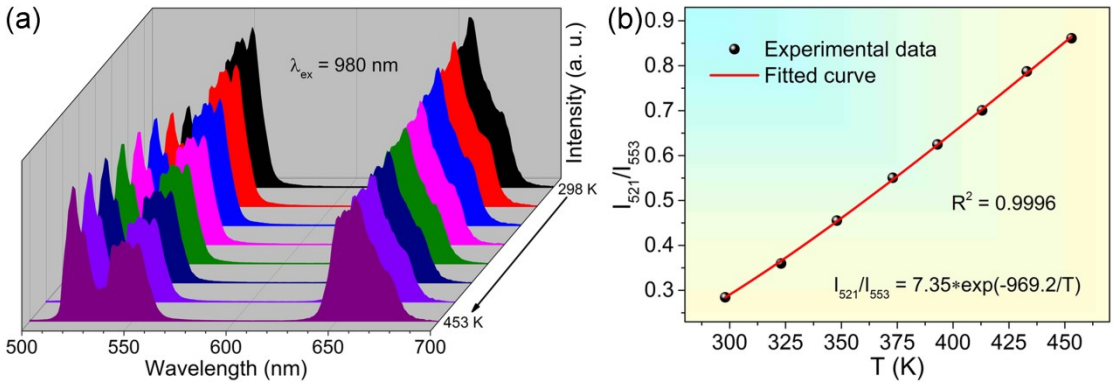

Fig. S2 (a) Emission spectra of the fabricated device excited by 980 nm light of 0.95 W/cm^2 at various temperatures. (b) Dependence of I_{521}/I_{553} on absolute temperature.

Table S1 Amounts of the starting materials used for LS host and LS:10%Yb^{3+},xEr^{3+} ($0.5 \leq x \leq 3\%$)

Concentration	La_2O_3 (g)	SiO_2 (g)	Yb_2O_3 (g)	Er_2O_3 (g)
host	0.8076	0.1941	0	0
x = 0.5%	0.7228	0.1941	0.1559	0.0047
x = 1%	0.7188	0.1941	0.1559	0.0094
x = 2%	0.7107	0.1941	0.1559	0.0188
x = 3%	0.7026	0.1941	0.1559	0.0282

Table S2 Amounts of the starting materials used for LS:10%Yb^{3+},xTm^{3+} ($0.25\% \leq x \leq 1\%$)

Concentration	La_2O_3 (g)	SiO_2 (g)	Yb_2O_3 (g)	Tm_2O_3 (g)
y = 0.25%	0.7248	0.1941	0.1559	0.0024
y = 0.5%	0.7228	0.1941	0.1559	0.0048
y = 0.75%	0.7208	0.1941	0.1559	0.0072
y = 1%	0.7188	0.1941	0.1559	0.0096

Table S3 τ_i and A_i (i = 1, 2) values for decay curves of LS:10%Yb^{3+},yTm^{3+} ($0.25\% \leq y \leq 1\%$) by monitoring 474 nm

y (%)	τ_1 (μs)	τ_2 (μs)	A_1	A_2
0.25	90.5	264.6	8946.8	1271.8
0.5	64.3	214.5	8567.7	1232.2
0.75	45.8	174.7	9437.2	828.9
1	41.4	161.1	8355.2	805.8

Table S4 τ_i and A_i (i = 1, 2) values for decay curves of LS:10%Yb^{3+},yTm^{3+} (0.25% ≤ y ≤ 1%) by monitoring 790 nm

y (%)	τ_1 (μs)	τ_2 (μs)	A_1	A_2
0.25	117.3	379.5	9964.9	33.2
0.5	97.0	374.1	9720.6	40.5
0.75	56.4	113.4	8073.1	981.0
1	54.8	114.8	8610.7	849.7

Table S5 τ_i and A_i (i = 1, 2) values for decay curves of LS:10%Yb^{3+},2%Er^{3+} by monitoring 553 nm at various temperatures

T	τ_1 (μs)	τ_2 (μs)	A_1	A_2
25	43.5	95.3	3267.7	6300.2
75	44.9	95.6	2967.2	5886.9
125	46.1	96.5	3398.7	5773.3
175	42.1	90.6	3463.0	5978.2
225	37.8	89.3	3331.8	5881.7

Table S6 τ_i and A_i (i = 1, 2) values for decay curves of LS:10%Yb^{3+},2%Er^{3+} by monitoring 659 nm at various temperatures

T	τ_1 (μs)	τ_2 (μs)	A_1	A_2
25	193.4	1907.8	9693.1	13.4
75	187.8	1833.2	9406.4	12.9
125	184.8	1724.1	9170.6	11.8
175	175.8	1961.4	9322.1	18.2
225	177.3	1965.2	9401.2	11.3