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Preparation of fluorescence encoded microbeads with large encoding capacities and application of suspension array technology.

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Table S1. DLS detection data of the microbeads.[α]

microbeads	blank	GMA and tBMA	MAA	FEMs
Average sizes (μm)	2.5 ± 0.1	5.0 ± 0.2	4.7 ± 1.4	5.0 ± 0.2
CV	3.7 %	5.3%	29.8%	4.0 %
SP (mV)	0 ± 0.1	- 40 ± 0.5	-31 ± 9.2	- 40 ± 0.5

[α]Values are the mean ±SD of three independent measurements in duplicates.

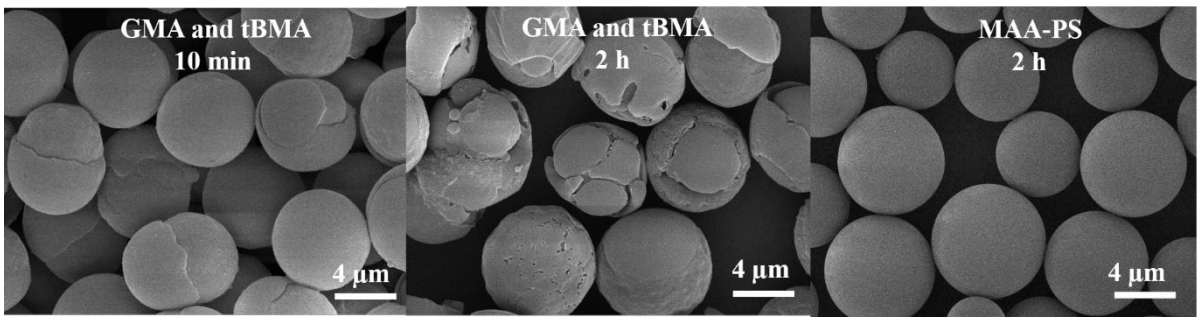

Fig. S1 SEM images of GMA and tBMA expanded carboxyl microspheres reacted in sulfuric acid solution

for 10 min and 2 h, and SEM images of MAA modified PS in sulfuric acid solution. The average sizes were 4.5 ± 0.5 μm, 4.5 ± 0.8 μm, and 4.5 ± 1.2 μm for a/b/c. Scale bar, 4 μm.

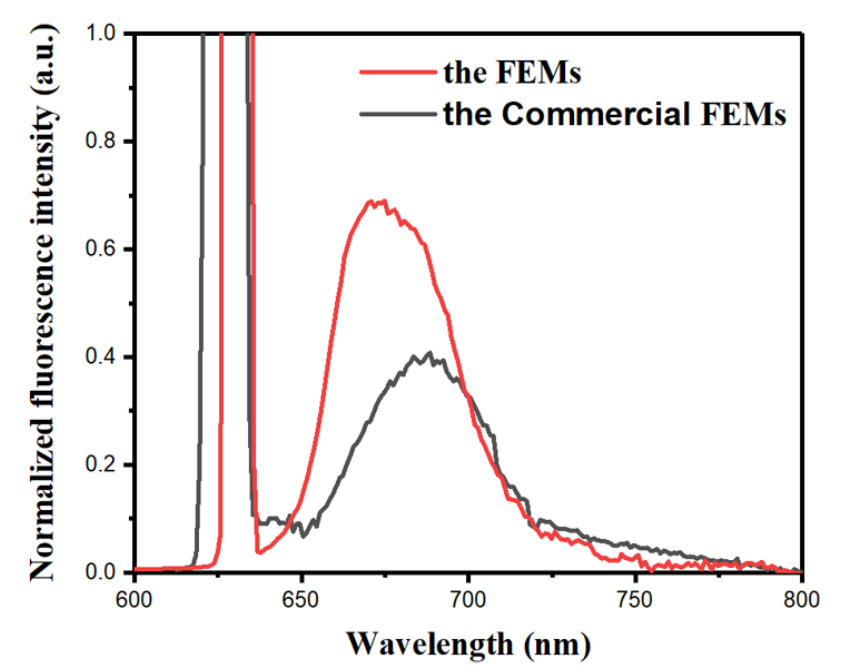

Fig. S2 The comparison study of fluorescence intensity for FEMs and commercial FEMs with the largest fluorescence intensity.

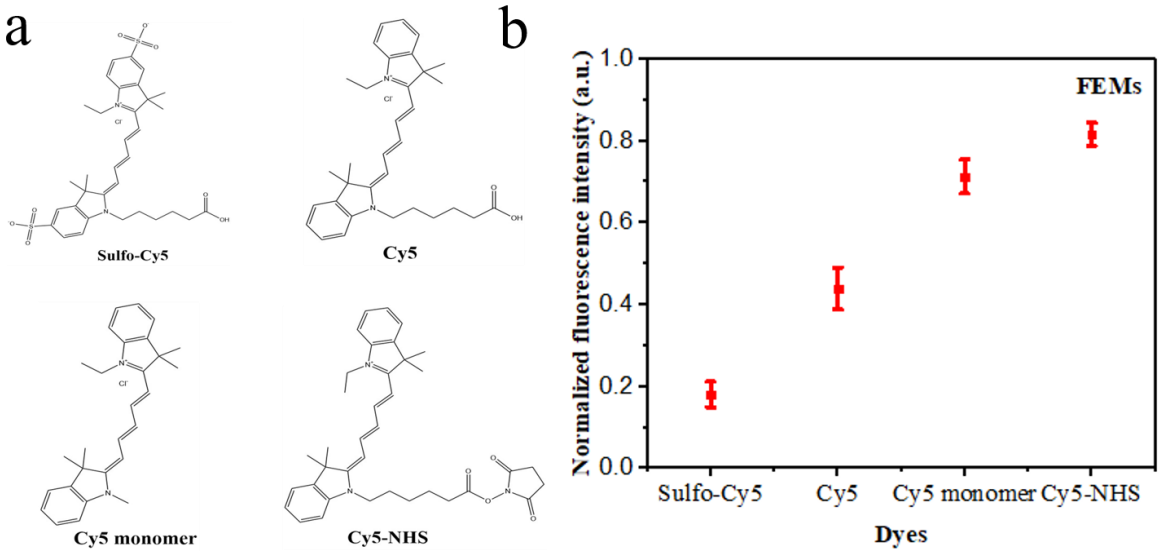

Fig. S3 (a) The structural formula of the sulfonated Cy 5, Cy 5, Cy 5 monomer and Cy 5-NHS. (b) The fluorescence intensity of FEMs varies with the hydrophobicity of dyes.

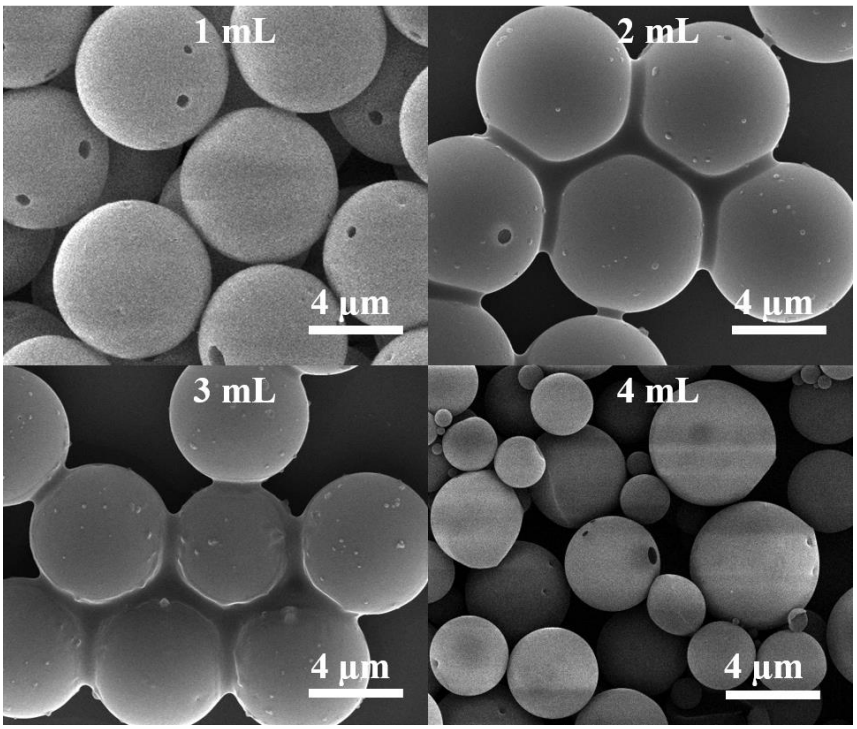

Fig. S4 The SEM images of 1 mL, 2 mL, 3 mL, 4 mL dichloromethane expanded carboxyl polystyrene microspheres. The average sizes were 5.0 ± 0.3 µm, 5.1 ± 0.3 µm, 5.3 ± 0.6 µm, and 4.3 ± 1.4 µm for a/b/c/d. Scale bar, 4 µm.

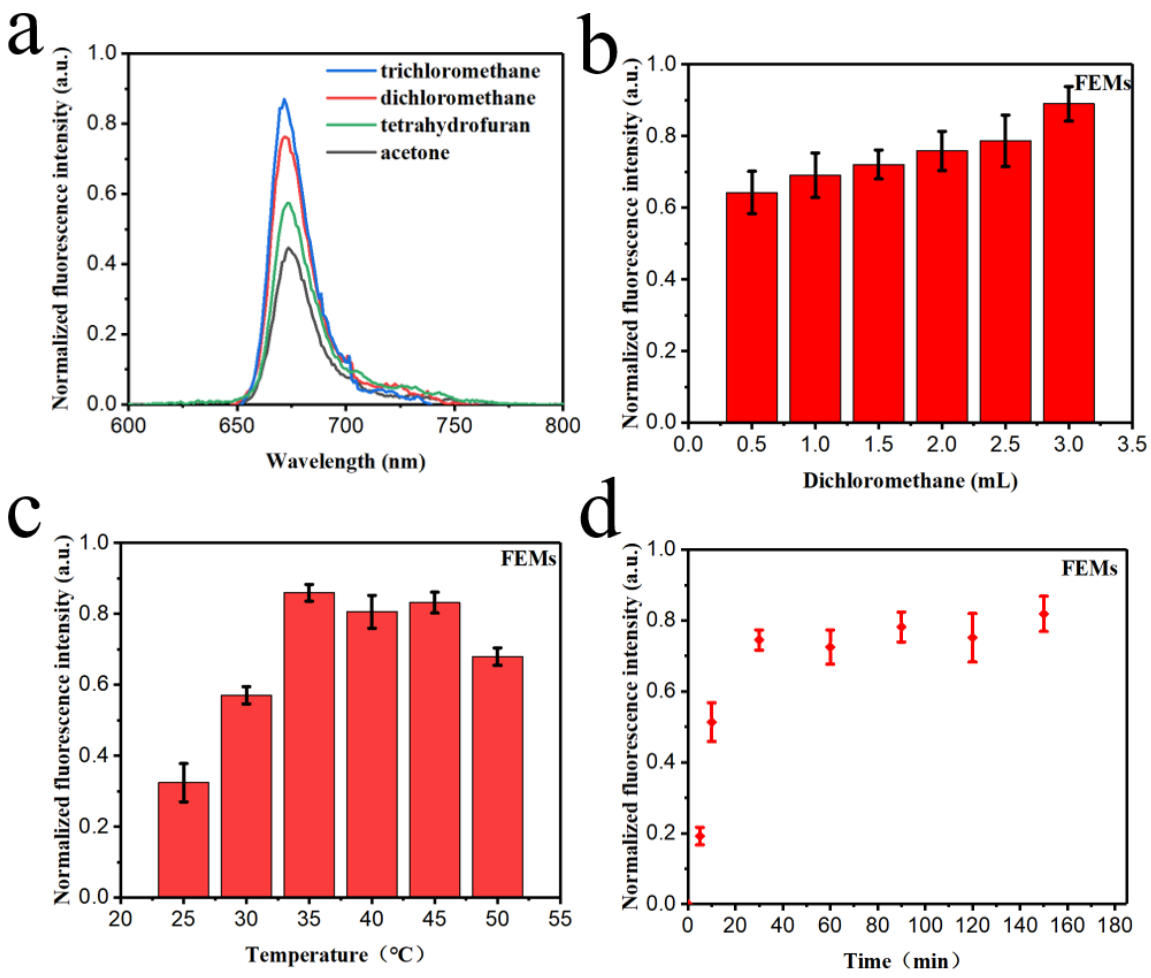

Fig. S5 Optimization of swelling conditions. (a) swelling agent; (b) dosage of organic solvents; (c) temperature; (d) time during swelling process of dye.

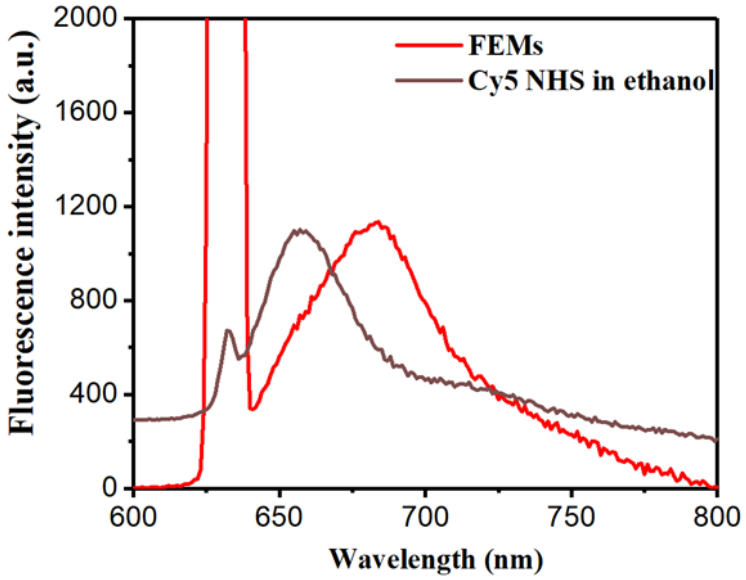

Fig. S6 The change of optimum fluorescence wavelength in different media.

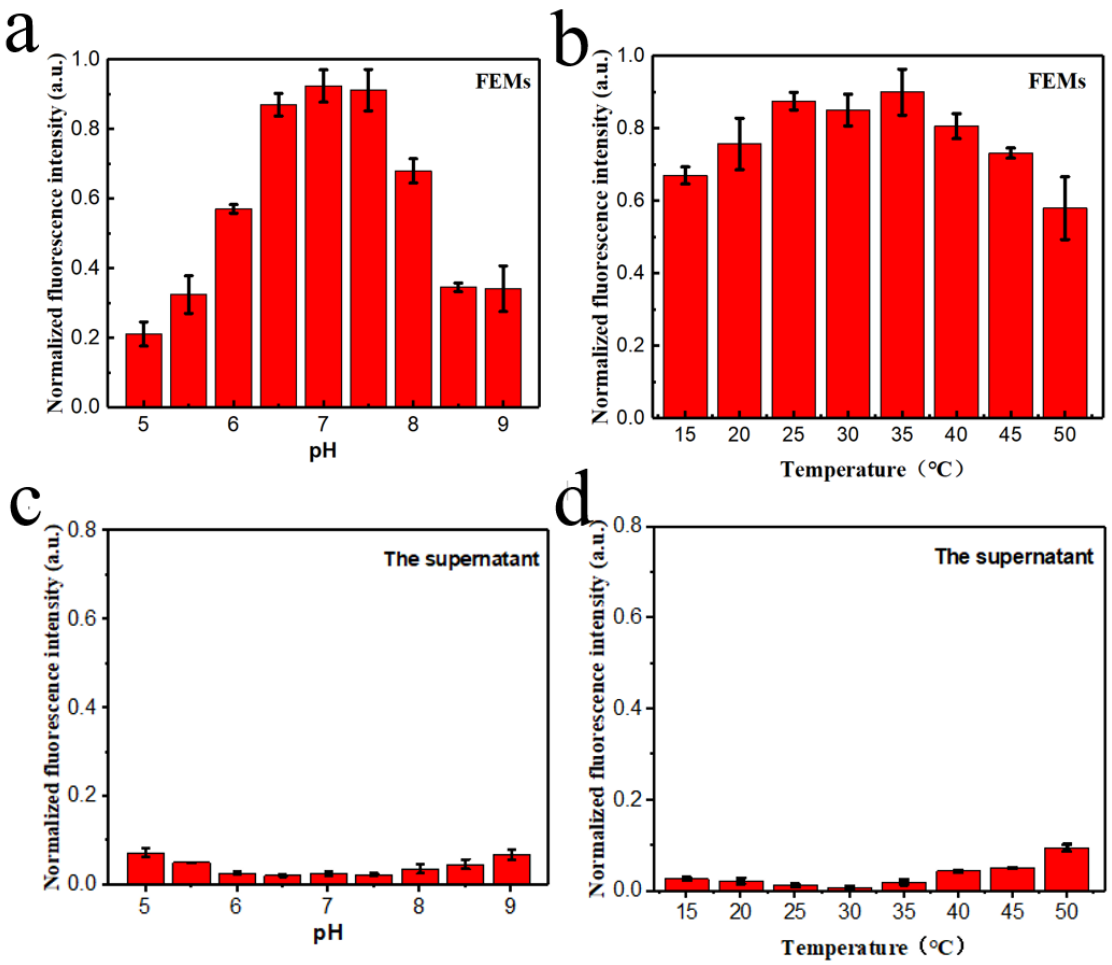

Fig. S7 The fluorescence of FEMs at different (a) pH and (b) temperatures. The fluorescence of corresponding supernatant solution at different (c) pH and (d) temperatures.

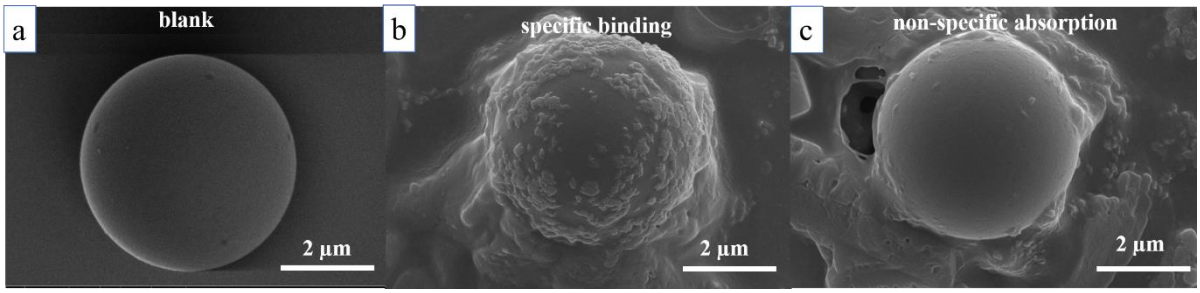

Fig. S8 (a) SEM image of blank FEMs; (b) SEM image of FEMs- goat anti-mouse IgG linked with mouse IgG, and FITC-labeled rabbit anti-mouse IgG; (c). SEM image of FEMs- goat anti-mouse IgG mixed with rabbit IgG, and FITC-labeled goat anti-rabbit IgG.