Supplementary Material (ESI) for Soft Matter

Supplementary Information

Intense and Selective Coloration of Foams Stabilized with Functionalized Particles

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1. Elemental analysis using EDX

A representative EDX spectrum of HMC-EB dye complex particles (HMC/EB ratio is 100/1 by weight) is shown in Fig. S1. The weight ratio of iodine/carbon in the spectrum is in a range of 1.5 ~ 3.5%. Since the iodine/carbon ratio for the EB dye-only is ca. 200% (Fig. S2.), the iodine/carbon ratio (1.5 ~ 3.5%) for HMC-EB complex appears to be reasonable. More importantly, most of the iodine/carbon signals analyzed over several different spots were within the range of 1.5 ~ 3.5%, indicating EB dyes are uniformly distributed in the HMC phase.

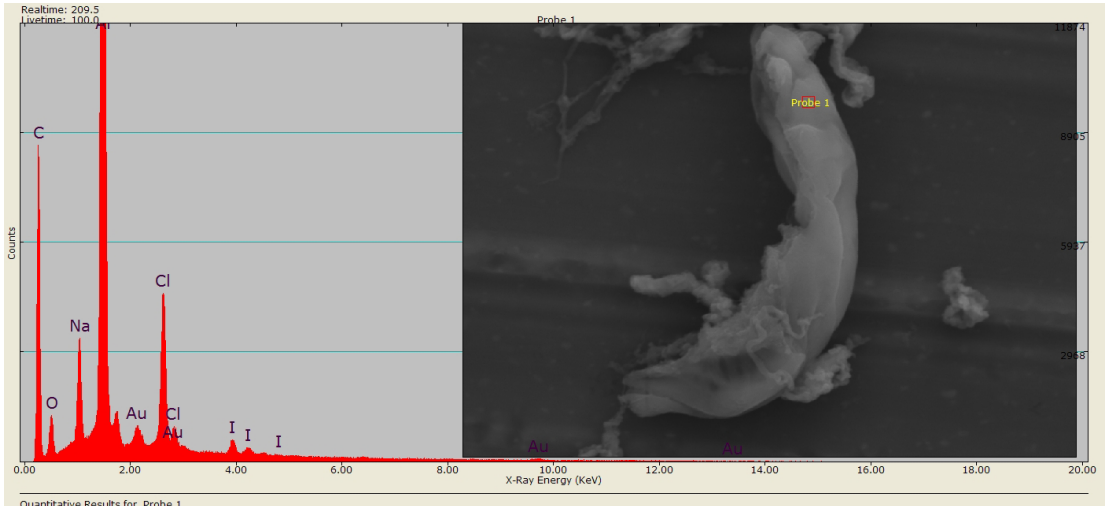

Fig. S1 EDX spectrum of HMC-EB dye complex particles.

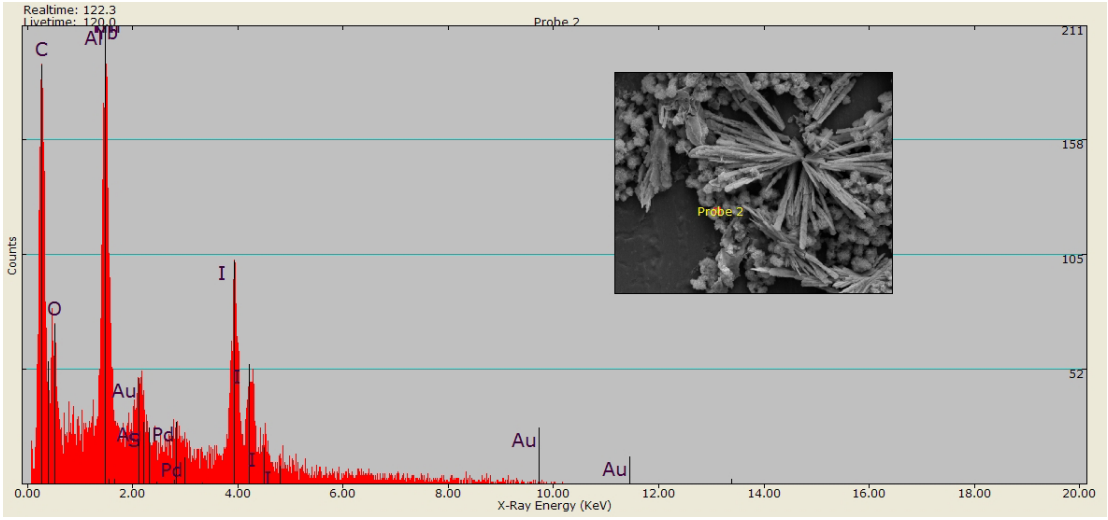

Fig. S2 EDX spectrum of EB dye-only particles.

2. Adsorption isotherm of Eosin Y (EY) dye on the HMC particles

We confirmed that other dyes containing carboxyl groups including Eosin Y (Fig. S3) have similar capability of intense and selective particle/foam coloring. Adsorption isotherm of EY (Eosin Y) dye on HMC particles was also studied at various pH as shown in Fig. S4, S5 and Table S1. The adsorption behavior of EY dye is very similar to that of EB dye since EY has similar pH-dependent solubility due to the carboxyl groups.

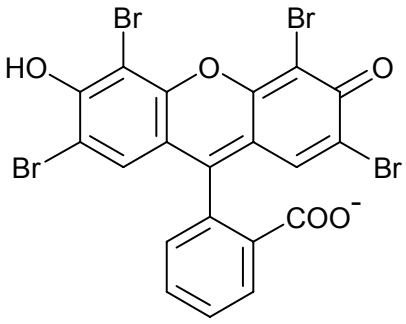

Fig. S3 Chemical structure of Eosin Y (pK_a=4.8).

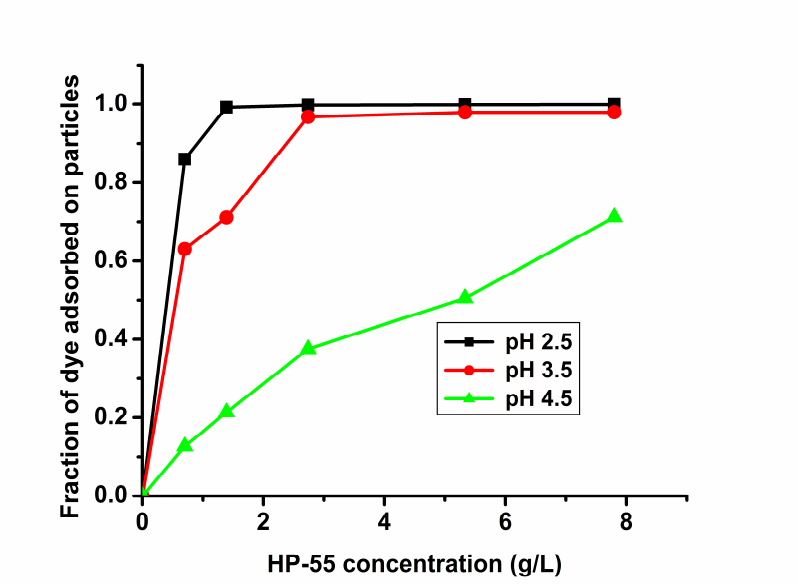

Fig. S4 The fraction of EY dye adsorbed on different HMC particle concentrations at varying pH.

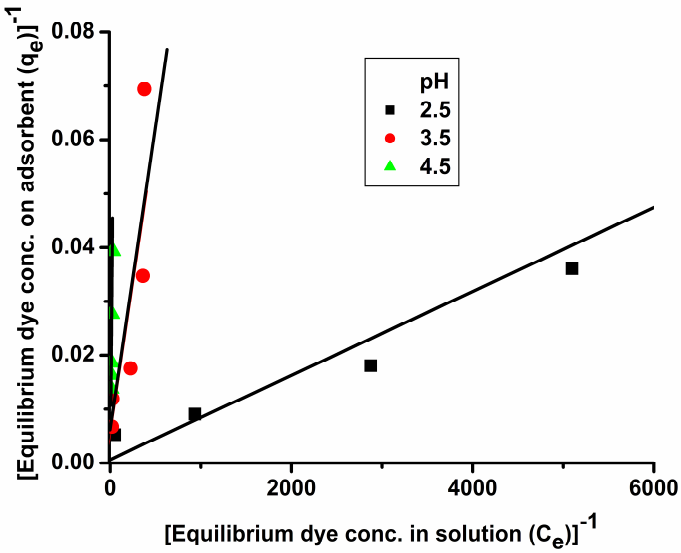

Fig. S5 Langmuir adsorption isotherms for EY dye on HMC particles at different pH conditions. Solid lines are linear fits for each experimental data set (symbols).

Table S1 Langmuir isotherm constants for EY dye adsorption on HMC particles at different pH conditions.

pH	K_L (ml/mg)	R_L (mg/g)	Type of adsorption
2.5	84.7	0.076	More favorable
3.5	28.0	0.19	Favorable
4.5	2.75	0.72	Less favorable