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SUPPLEMENTARY INFORMATION

Self-reporting of payloads release in polymer coatings based on the inner filter effect

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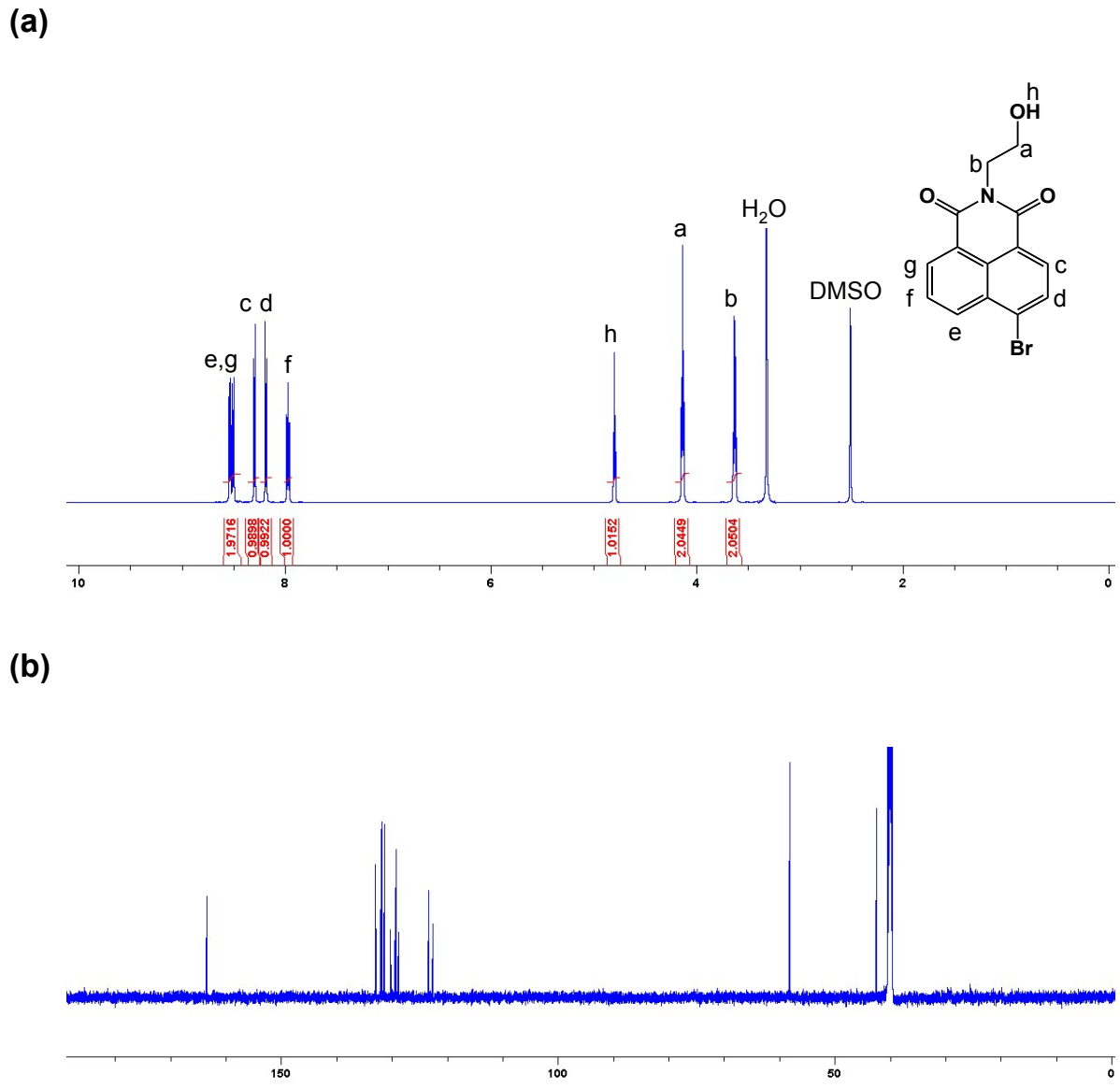
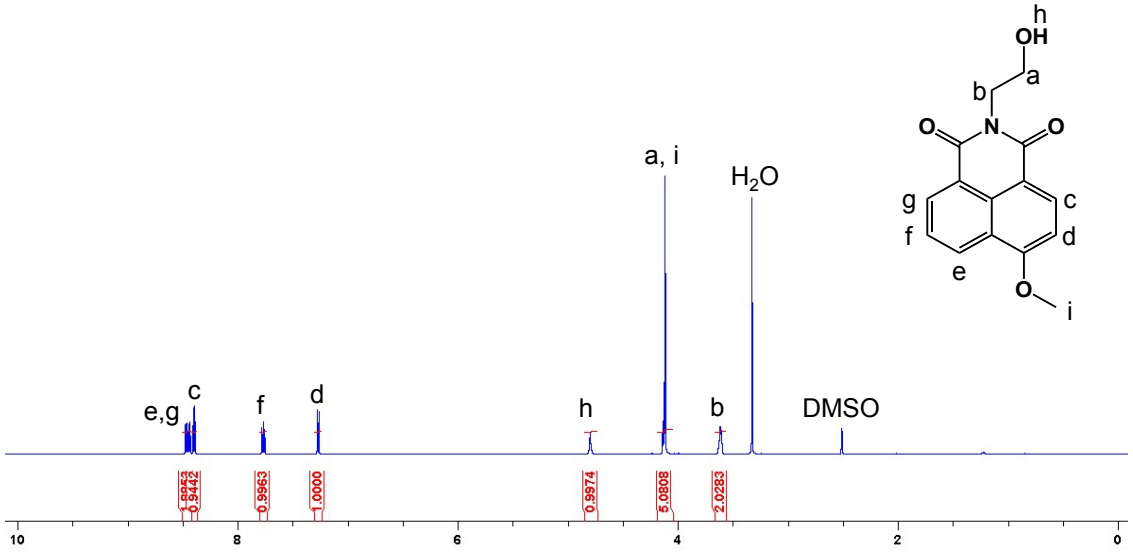


Fig. S1 (a) ^{1}H-NMR and (b) ^{13}C NMR spectra of (a) *N*-(2-hydroxyethyl)-4-bromo-1,8-naphthalimide in DMSO-d6.

(a)



(b)

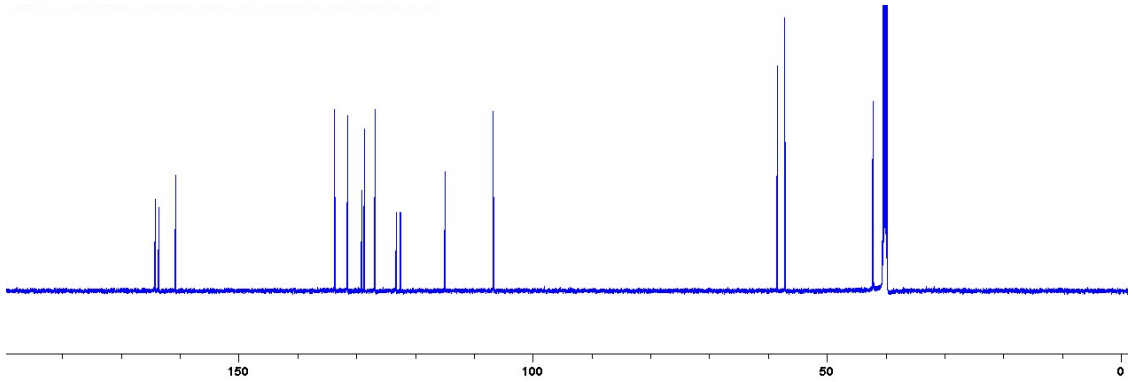


Fig. S2 (a) ^{1}H-NMR and (b) ^{13}C NMR spectra of *N*-(2-hydroxyethyl)-4-methoxy-1,8-naphthalimide in DMSO-d6.

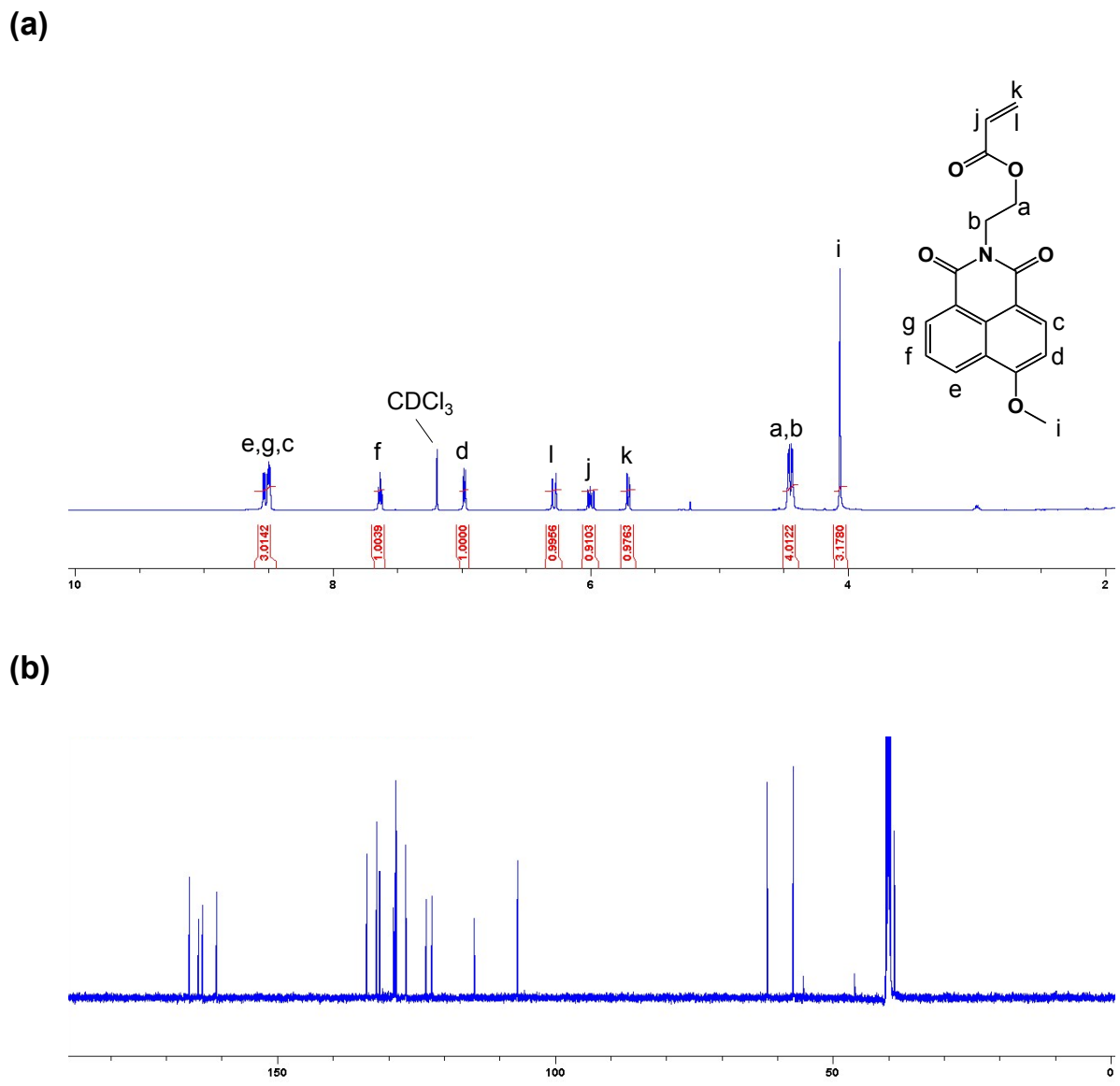


Fig. S3 (a) ^{1}H-NMR and (b) ^{13}C NMR spectra of *N*-(2-acryloyloxyethyl)-4-methoxy-1,8-naphthalimide in $CDCl_3$ for ^{1}H-NMR and DMSO-d6 for ^{13}C NMR .

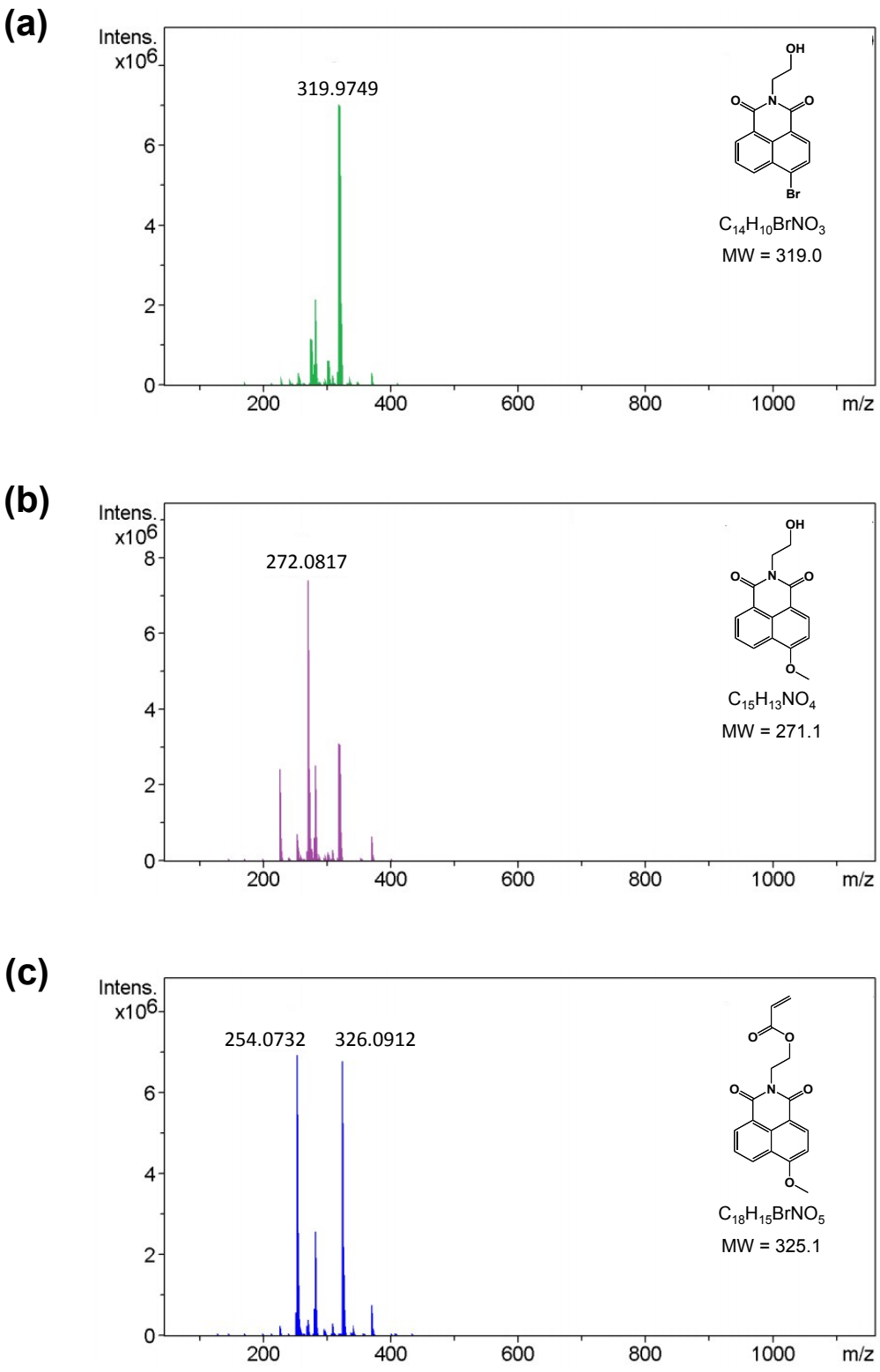


Fig. S4 Mass spectra of (a) *N*-(2-hydroxyethyl)-4-bromo-1,8-naphthalimide, (b) *N*-(2-hydroxyethyl)-4-methoxy-1,8-naphthalimide and (c) *N*-(2-acryloyloxyethyl)-4-methoxy-1,8-naphthalimide.

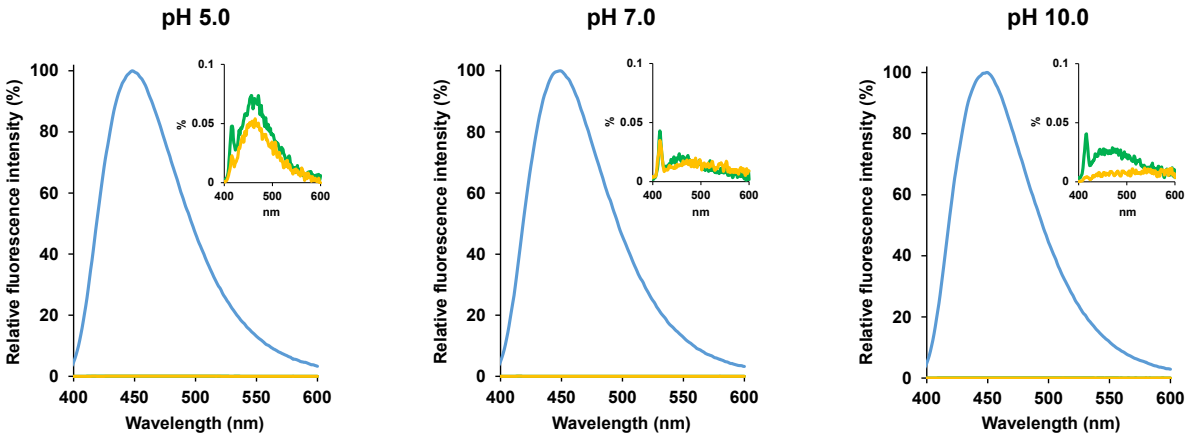


Fig. S5 Relative emission spectra of blue emitting monomer, *N*-(2-acryloyloxyethyl)-4-methoxy-1,8-naphthalimide (0.5 mM, blue line) and 8HQ (1 mM, yellow line and 10 mM, green line) in buffer solutions at pH 5, 7, and 10. The very low relative fluorescence intensity of 8HQ are shown in the insert.

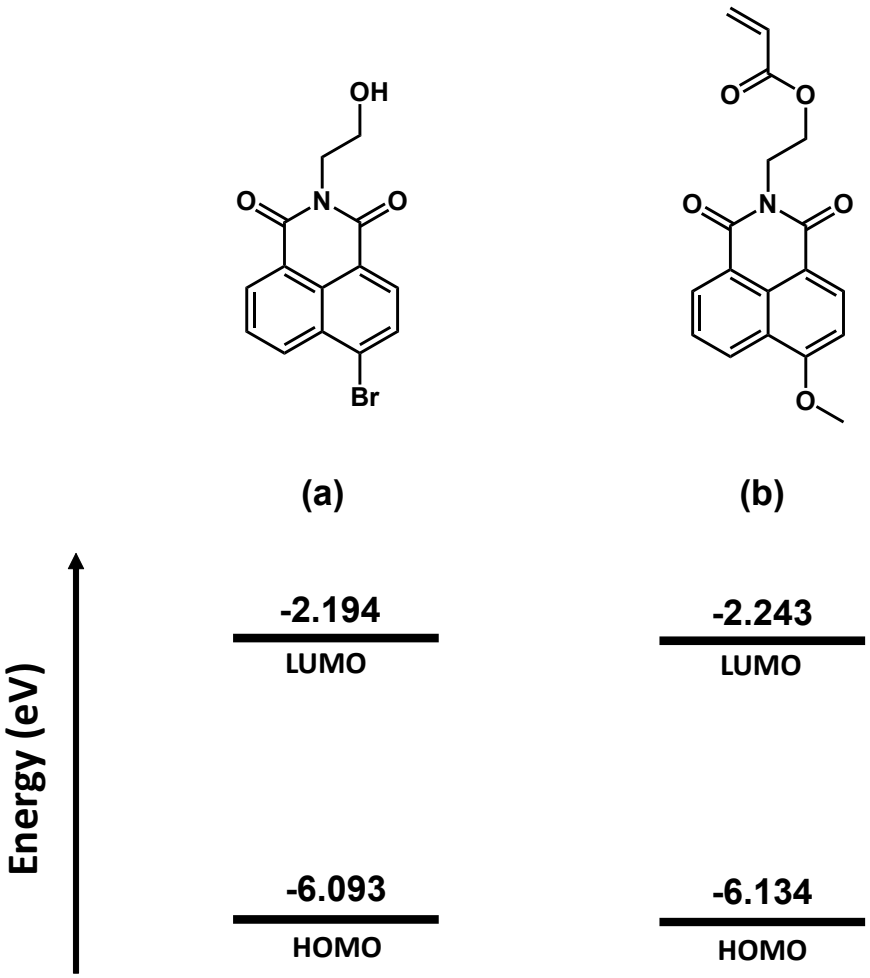


Fig. S6 Estimated LUMO and HOMO of (a) *N*-(2-hydroxyethyl)-4-methoxy-1,8-naphthalimide and(b) *N*-(2-acryloyloxyethyl)-4-methoxy-1,8-naphthalimide calculated at the B3LYP/6-31G(d) level using the Gaussian 09 software package.

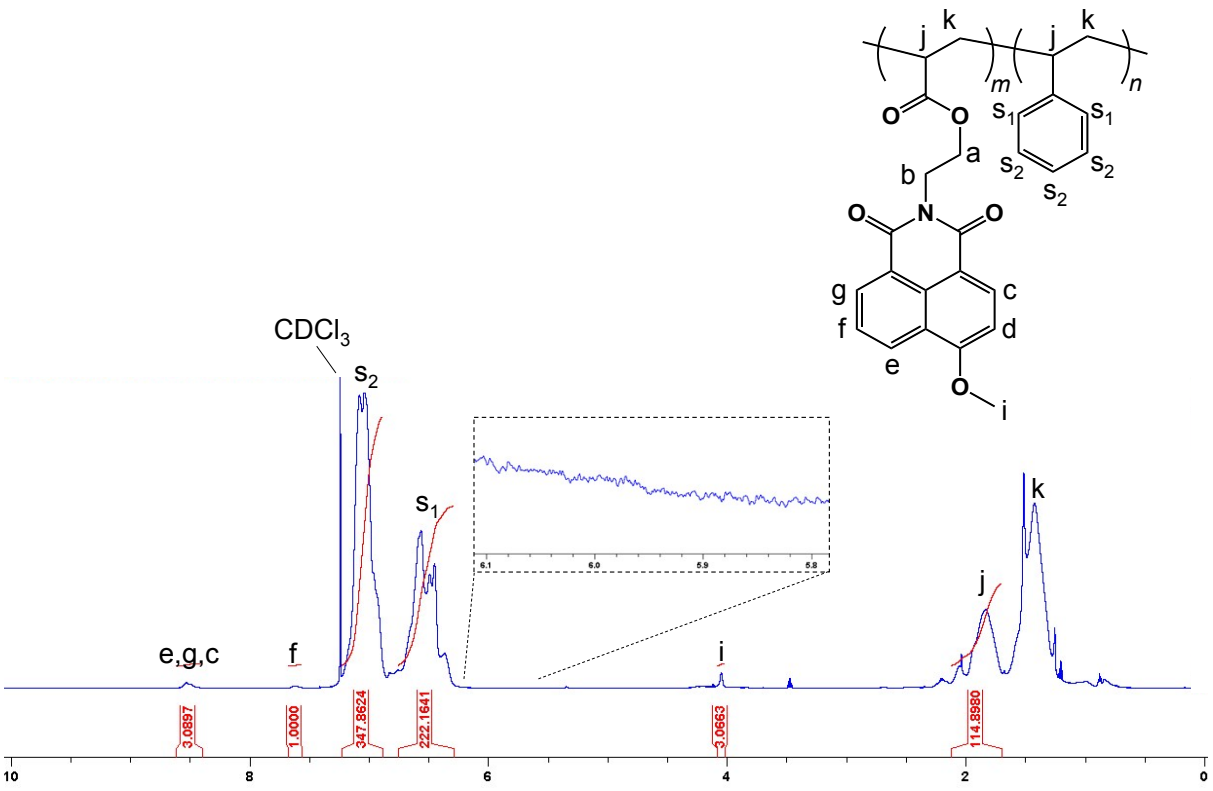


Fig. S7 ^{1}H-NMR spectra of labelled copolymer in $CDCl_3$.

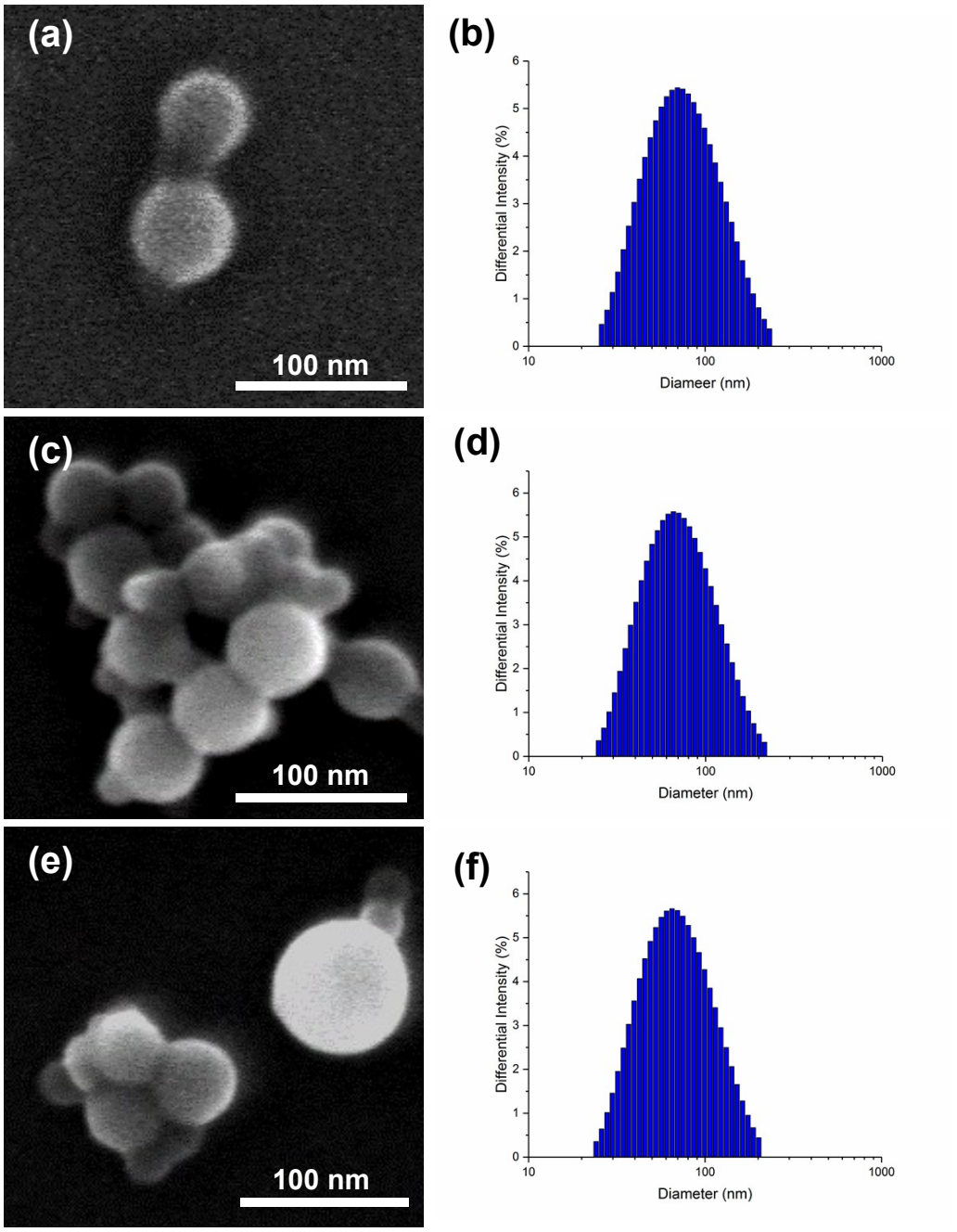


Fig. S8 SEM micrographs of nanoparticles without 8HQ (a), containing 16.7% 8HQ (c) and 44.4% 8HQ (e), showing an average diameters of 56 ± 7, 54 ± 12 and 53 ± 12 nm, respectively. Hydrodynamic diameters of nanoparticles without 8HQ (b), containing 16.7% 8HQ (d) and 44.4% 8HQ (f), showing an average hydrodynamic particle size of 62, 70, and 73 nm, respectively.

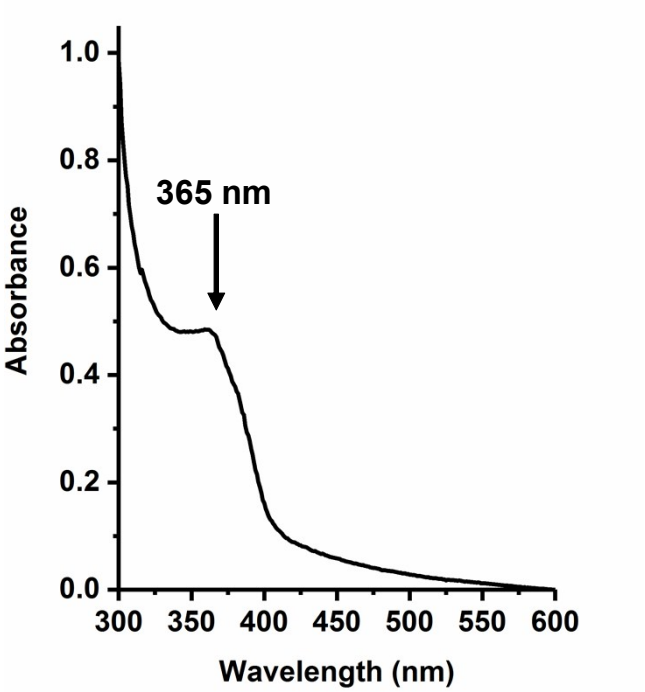


Fig. S9 Absorption of nanoparticles dispersion (Entry m137_0) at 2 mg/mL.

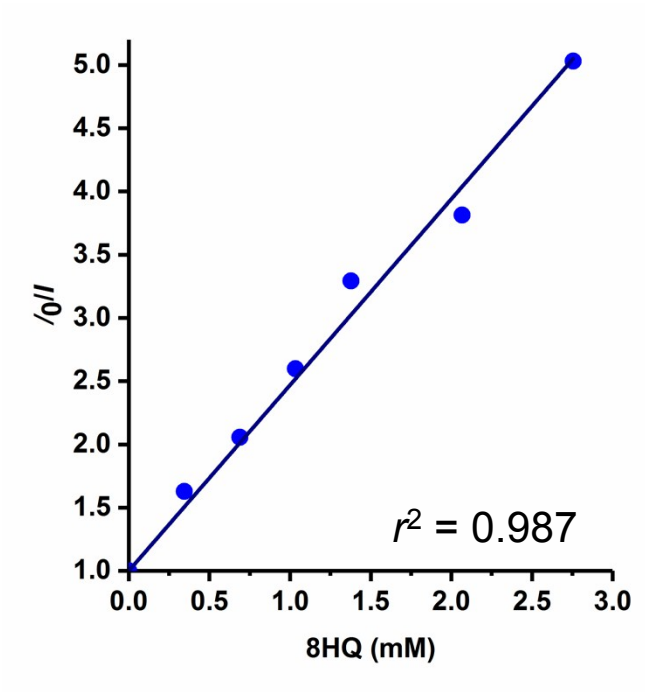


Fig. S10 Stern-Volmer plot (I_0/I) versus concentration of 8HQ in nanoparticles.

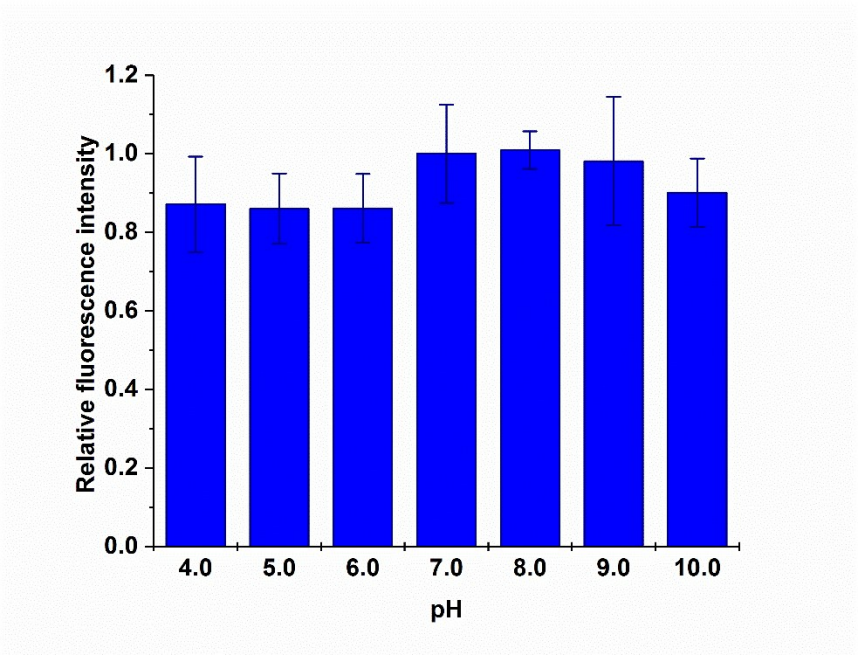


Fig. S11 Relative fluorescence intensities at 420 nm of copolymer nanoparticles dispersion (entry m137_0) at different pH values.

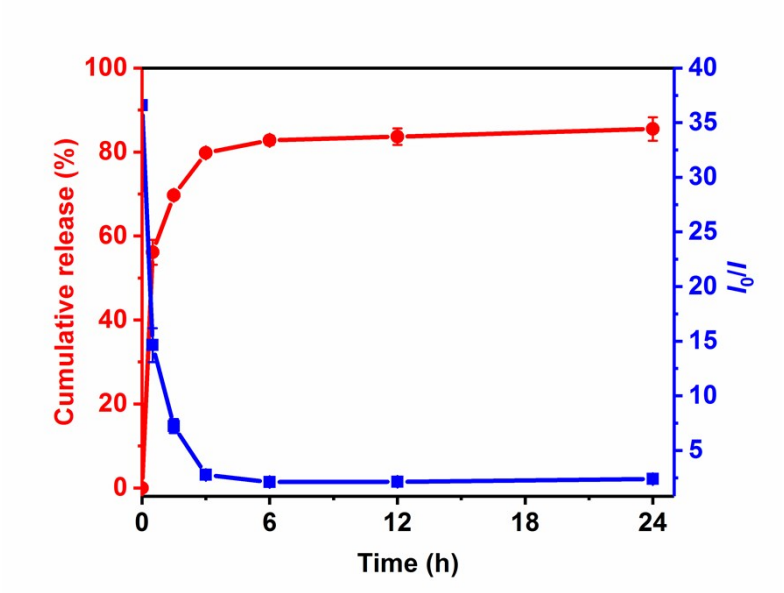


Fig. S12 Release profile of 8HQ (red cycles) and I_0/I (blue squares) of nanoparticles dispersion (entry m137_16) in acetate buffer pH 1.0 (λ_{ex} = 365 nm and λ_{em} = 420 nm).

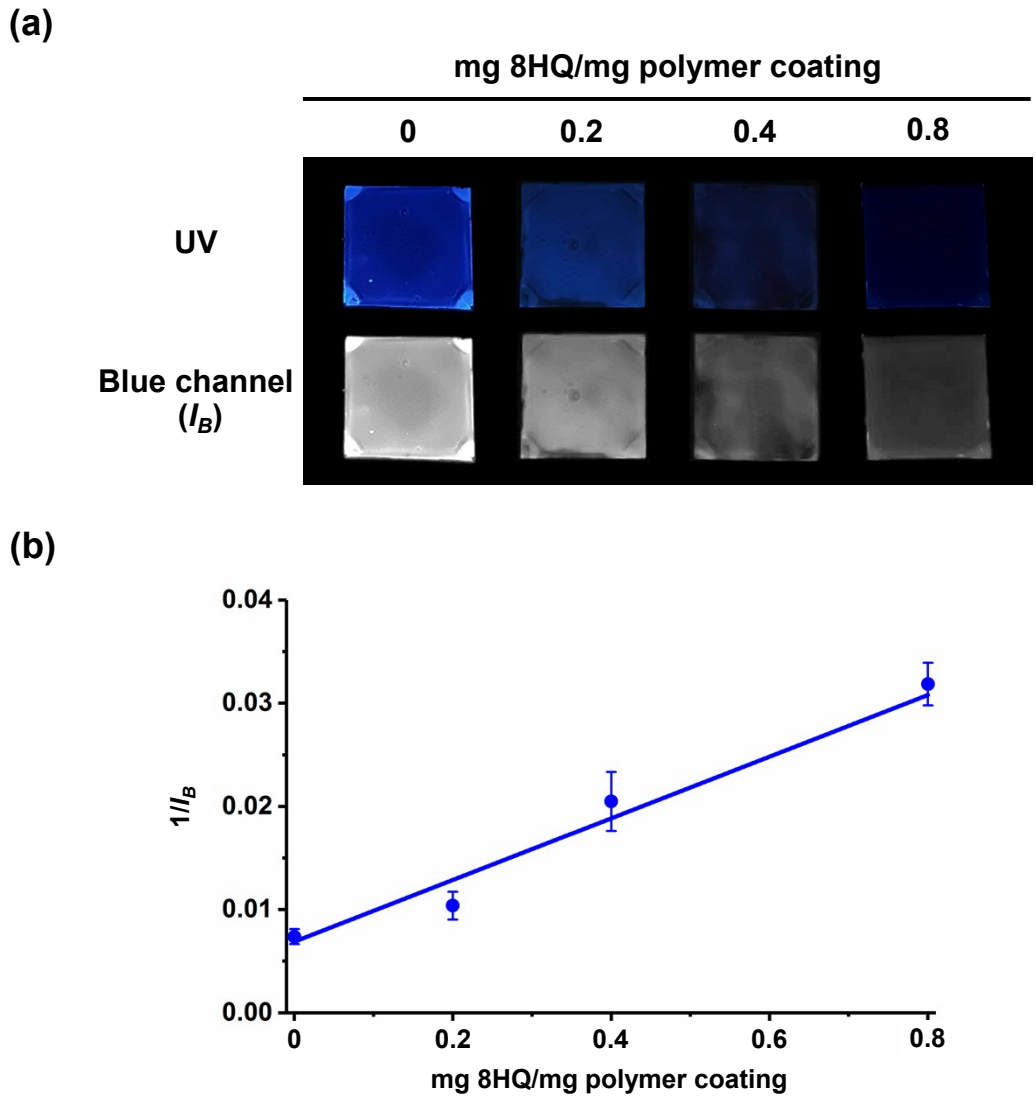


Fig. S13 (a) Photographs of blue-emitting polymer coatings on steel substrates with different amount of 8HQ under UV light (365 nm) and blue fluorescent intensity (I_B) of coatings from the blue channel of RGB colour mode using ImageJ software. (b) Linear relationship between average $1/I_B$ and concentration of 8HQ in the coatings.

Table S1. Absorbance value of the blue-emitting monomer (0.1 mM) in the presence of various amounts of 8HQ at the excitation (A_{ex}) and emission (A_{em}) wavelengths, observed fluorescence intensity I_{obs}, corrected fluorescence intensity I_{corr}, correction factor I_{corr}/I_{obs}, and relative observed (I_{obs}) and corrected fluorescence intensity (I_{corr}).

8HQ [μg/mL]	A_{ex}	A_{em}	I_{obs}	I_{corr}/I_{obs}	I_{corr}	Relative I_{obs}	Relative I_{corr}
0	0.3380	0.0166	48900	1.5042	73554	1	1
20	0.7754	0.0326	21699	2.5351	55010	0.4437	0.7479
40	1.1694	0.0373	11487	4.0119	46085	0.2349	0.6265
60	1.5391	0.0534	7248	6.2553	45339	0.1482	0.6164
80	1.8946	0.0606	4864	9.4973	46195	0.0995	0.6280
100	2.2267	0.0764	3150	14.176	44654	0.0644	0.6071

Table S2 Hydrodynamic diameter D_h and maximum emission wavelength at different pH values of copolymer nanoparticles dispersion (2 mg/mL).

pH	D_h		λ_{max}^{em}
	[nm]	PDI	[nm]
4.0	73	0.260	420
5.0	73	0.289	420
6.0	73	0.270	420
7.0	67	0.263	420
8.0	77	0.304	420
9.0	72	0.252	420
10.0	78	0.244	418