Supporting Information

for

Multiswitchable photoacid–hydroxyflavylium–polyelectrolyte nano-assemblies

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^{13}C NMR assignments, UV–vis and light scattering data

Table S1: ^{13}C NMR: Detailed signal assignment for different molecules. The color corresponds to the different molecules shown below.

Number of C-Atom	ppm
3	97.7
2	100.4
9	104.8
6	107.7
7	108.4
12	117.3
11	122.5
10	137.6
4	149.2
5	153.4
8	155.2
13	156.6
1	159.0
3/3	96.9
3	97.1
2	99.8
2/2	100.3
9	105.7
6/6	107.8
7/7	109.0
12/12	117.5
12	119.4
10	122.0
11	123.0
6	128.4
11	129.6
11	134.7
10	135.7
10	137.5
7	141.7
4/4/4	150.1
5	153.2
5	154.1
8/8	154.9
8	155.7
13/13/13	156.7
5	158.4
1/1/1	160.3
9	163.4
9	173.9
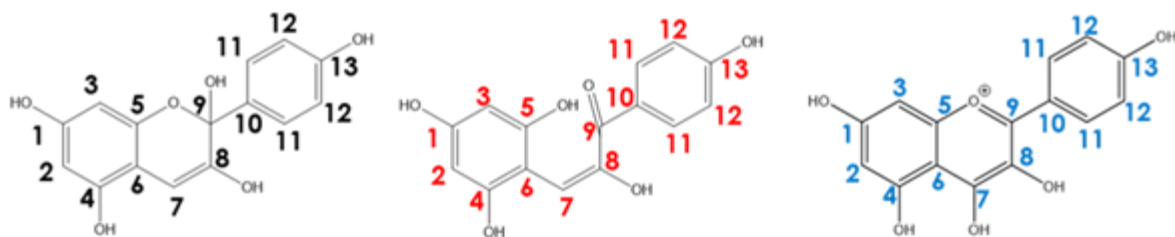
Scheme S1: Left: Flavy in form of **B**. Middle: Flavy in form of **Cc**. Right: Flavy in form of **B4**.
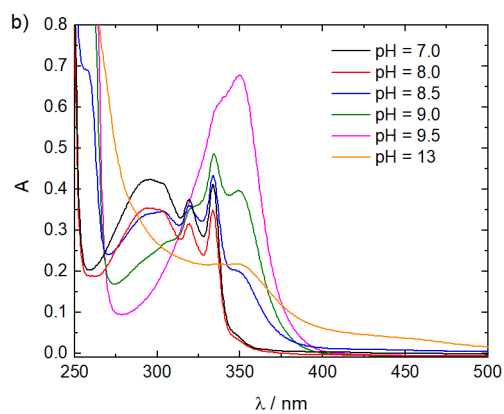

Figure S1: UV–vis of the photoacid 1N36S depending on the pH value of
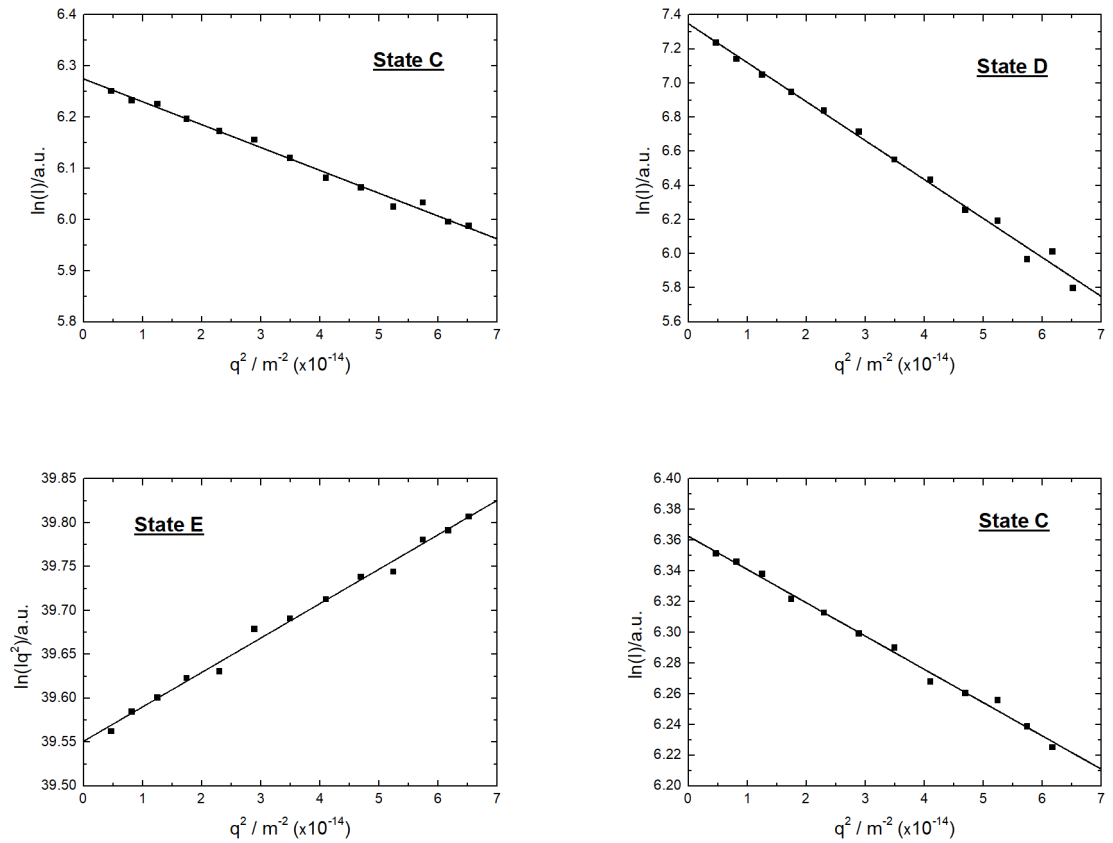
the solution.

Figure S2: Static light scattering data from the assemblies of cycle II. Above left: **C**: pH 2.0. Above right: **D**: pH 5.0. Bottom left: **E**: Irradiation at λ = 300 nm. Bottom right: **C**: Dark and acidic environment.
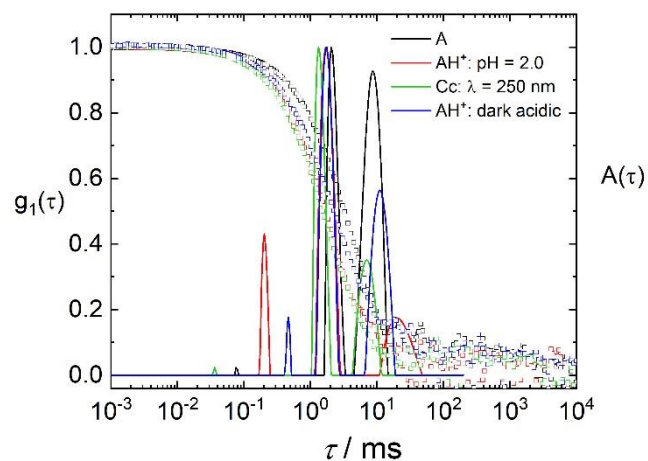
Figure S3: Electric field autocorrelation function $g_1(\tau)$ and distribution of relaxation times $A(\tau)$ at a scattering angle of $\Theta = 90°$ for the assemblies with the building blocks Flavy and PAA at a charge ratio of $l = 0.5$.
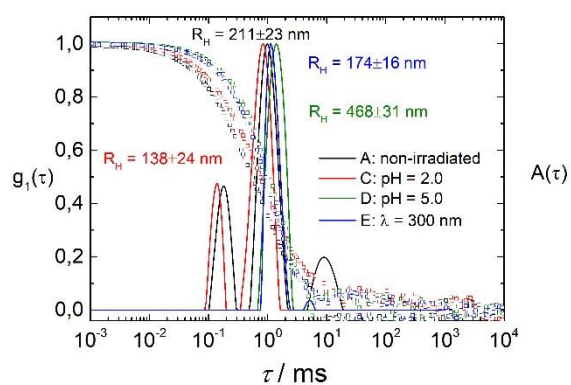

Figure S4: Electric field autocorrelation function $g_1(\tau)$ and distribution of relaxation times $A(\tau)$ at a scattering angle of $\Theta = 90°$ for the assemblies at a concentration ratio of $l = 4.0$.