Electronic Supplementary Material (ESI) for Analyst

Supporting Information

Fenton reagent-tuned DNA-Ag fluorescent nanoclusters as a versatile fluorescence probe and logic device

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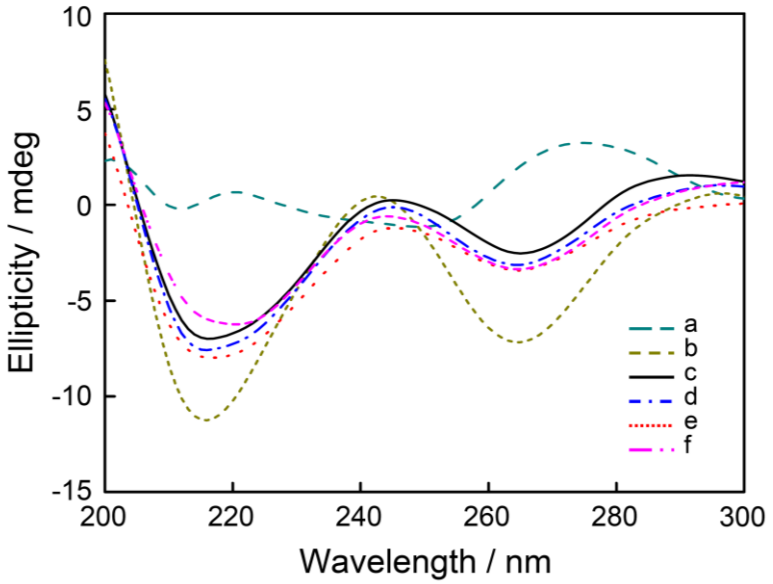

Figure S1 CD spectra of the following solutions at pH 7. a: DNA (10 μM); b: DNA (5 μM) + $AgNO_3$ (30 μM); c: DNA-Ag NCs (0.1X); d: DNA-Ag NCs (0.1X) + 5 μM Cu^{2+}; e: DNA-Ag NCs (0.1X) + 5 μM Cu^{2+} + 5 μM AA; f: DNA-Ag NCs (0.1X) + 5 μM Cu^{2+} + 5 μM AA + 1 mM H_2O_2.

Table S1 Fitted decay lifetime components for DNA-Ag NCs and Fenton reagent.

Sample	τ_1 / ns	A_1 / %	τ_2 / ns	A_1 / %	χ^2	τ / ns
1	0.36	46.82	2.46	53.18	1.139	0.66
2	0.54	41.4	2.5	58.6	1.095	0.99
3	0.46	44.74	2.48	55.26	0.842	0.84
4	0.41	48.13	2.43	51.87	1.288	0.71
5	0.66	39.58	2.64	60.42	0.82	1.21
6	0.27	44.59	2.44	55.41	1.265	0.54
7	0.29	48.69	2.40	51.31	1.221	0.53
8	0.19	51.32	2.43	48.68	1.33	0.34

(1) DNA-Ag NCs (0.03X), (2) DNA-Ag NCs (0.03X) + 1 μM Cu^{2+}, (3) DNA-Ag NCs (0.1X) + 5 μM Cu^{2+}+ 1 μM AA, (4) DNA-Ag NCs (0.03X) + 1 mM H_2O_2, (5) DNA-Ag NCs (0.03X) + 1 μM Cu^{2+}+ 1 μM AA, (6) DNA-Ag NCs (0.03X) + 1 μM Cu^{2+}+ 1 mM H_2O_2, (7) DNA-Ag NCs (0.03X) + 1 μM AA + 1 mM H_2O_2, (8) DNA-Ag NCs (0.03X) + 1 μM Cu^{2+}+ 1 μM AA + 1 mM H_2O_2.

All the data were analyzed using the multi-exponential model described by Equation 1:

$$I(\mathrm{t}) = \sum_{i=1}^{n} \alpha_i \exp\left(-\frac{\mathrm{t}}{\tau_i}\right)$$

Where τ_i is the decay time, α_i is the amplitude of the components at $t = 0$, and n is the number of decay time. The resulting decay time τ_i, their fractional contributions Ai, the average decay lifetime τ (calculated from Equation 2), and the value of the goodness-of-fit parameter χ^2, are summarized in Table S1.

$$\overline{\tau} = \frac{\sum_{i=1}^{n} \alpha_i \tau_i^2}{\sum_{i=1}^{n} \alpha_i \tau_i}$$