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Supporting information for article:

Band gap, sorption properties and fluorescence sensing behaviour of a novel 1D→2D cathenane-like cobalt(II)–organic framework

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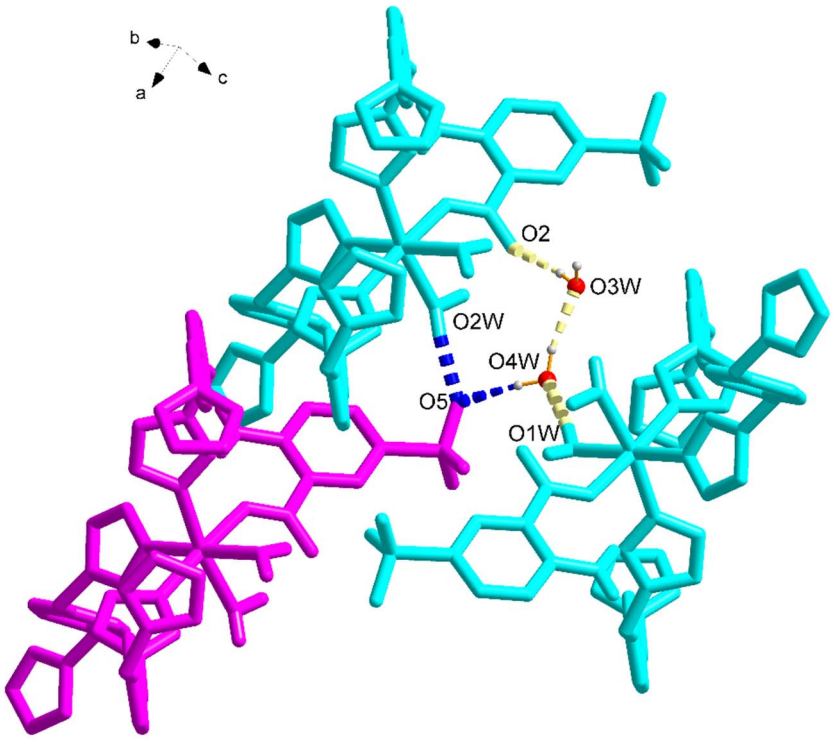


Figure S1 The interlayer hydrogen bonding between the uncoordinated sulfonate oxygen atom O5 of the adjacent layer and the coordinated O2W and the lattice O4W [O2W-H2WB···$O5^{vi}_{sulfonate}$ 1.9337(198) Å, symmetry code: (vi) x−1, y, z, O4W-H4WB···$O5^{i}_{sulfonate}$ 2.0714(250) Å, symmetry code: (i) x−1, −y+3/2, z+1/2].

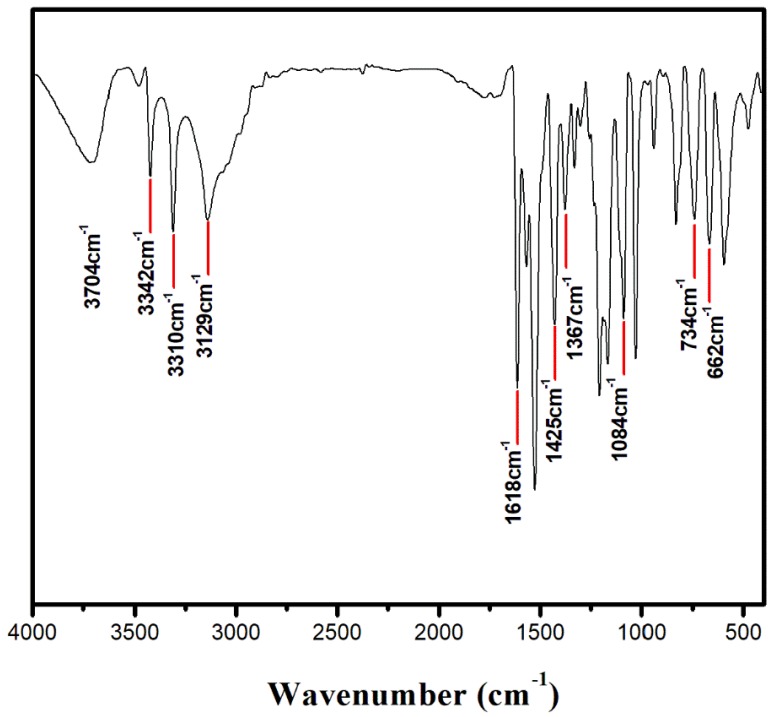


Figure S2 The FT–IR spectrum of complex (**1**).

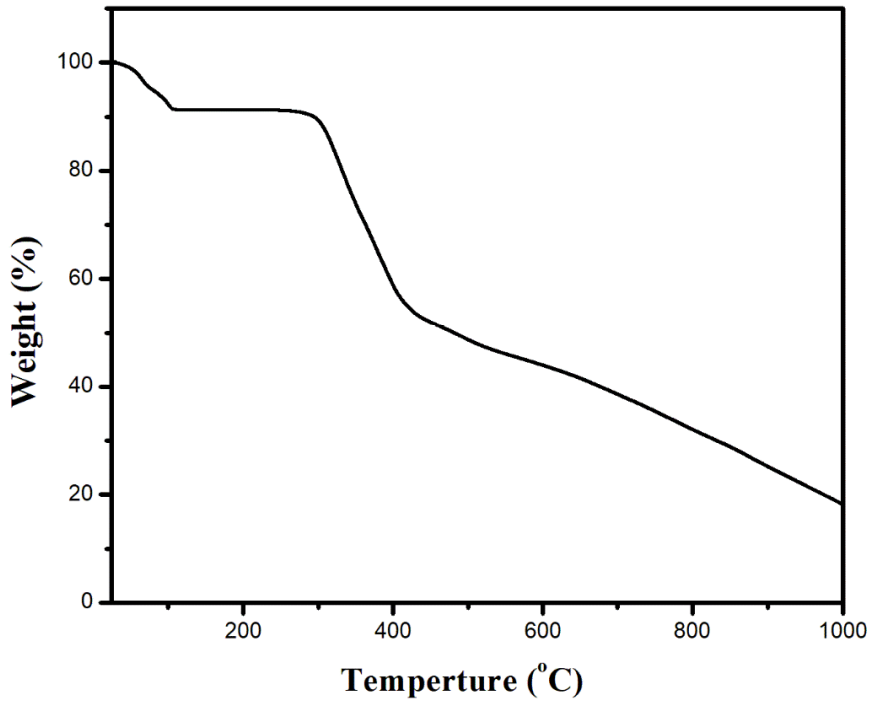


Figure S3 The thermogravimetric analysis (TGA) curve of complex (**1**).

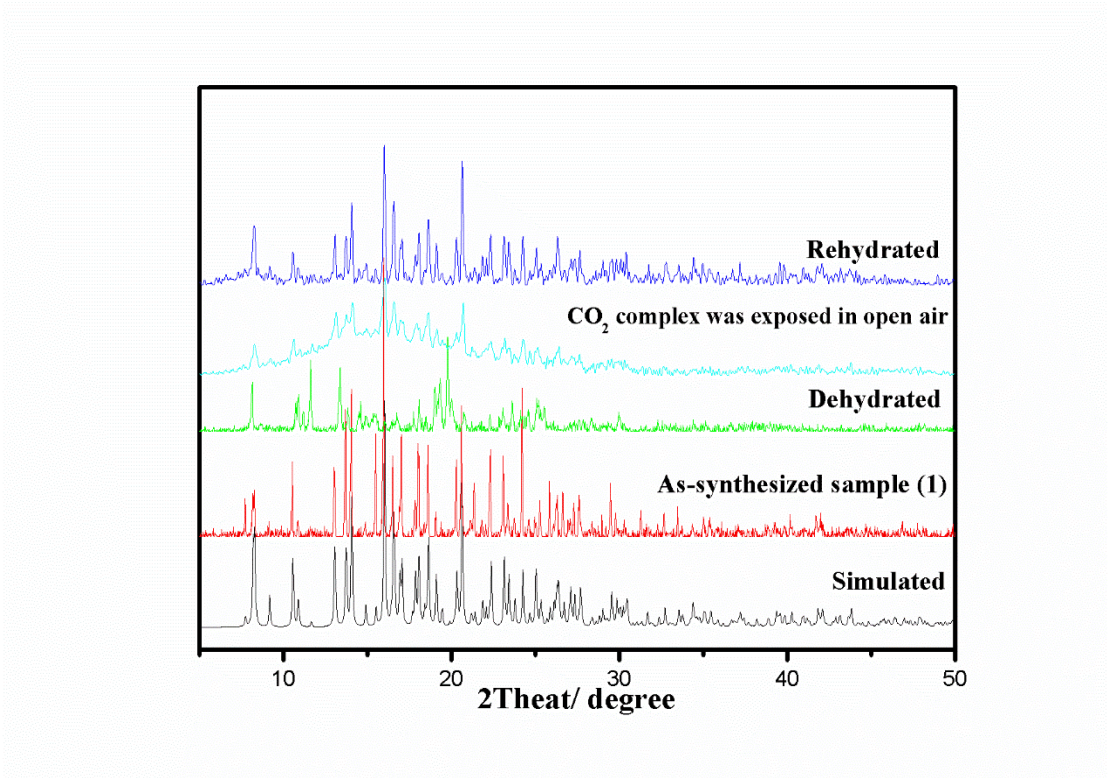


Figure S4 The VT-PXRD patterns recorded for (**1**), showing the simulated XRD pattern calculated from the single-crystal data with Mercury (Macrae et al., 2008) (black), that for the sample as-synthesized (red), that after removal of the water molecules at 388 K (green), the CO_2 complex exposed in 1 bar in atmosphere (cyan) and that after being soaked in water for about 3 d at room temperature (blue).

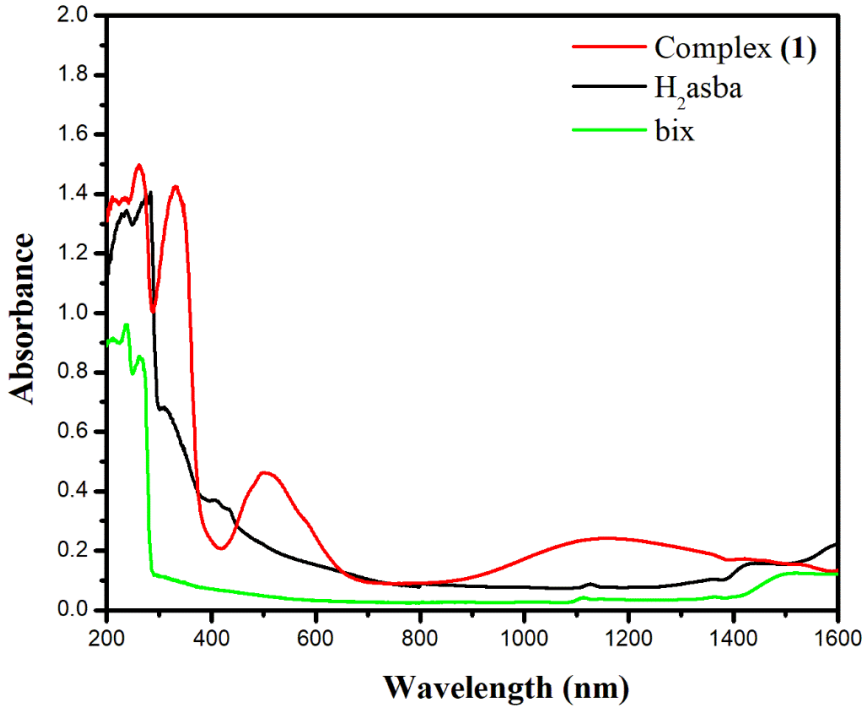


Figure S5 The solid-state UV–Vis–NIR absorption spectra of H_2asba (black), bix (green) and complex (**1**) (red), respectively.

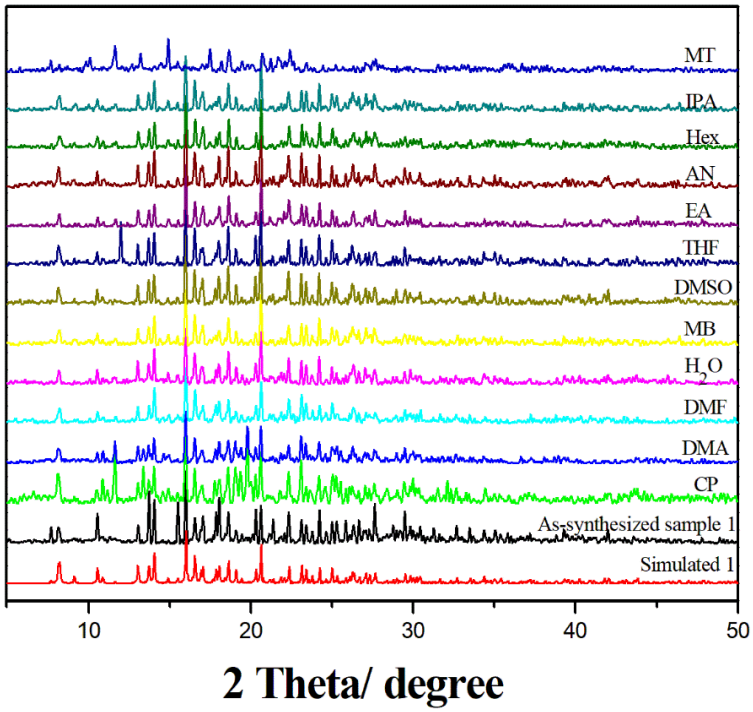
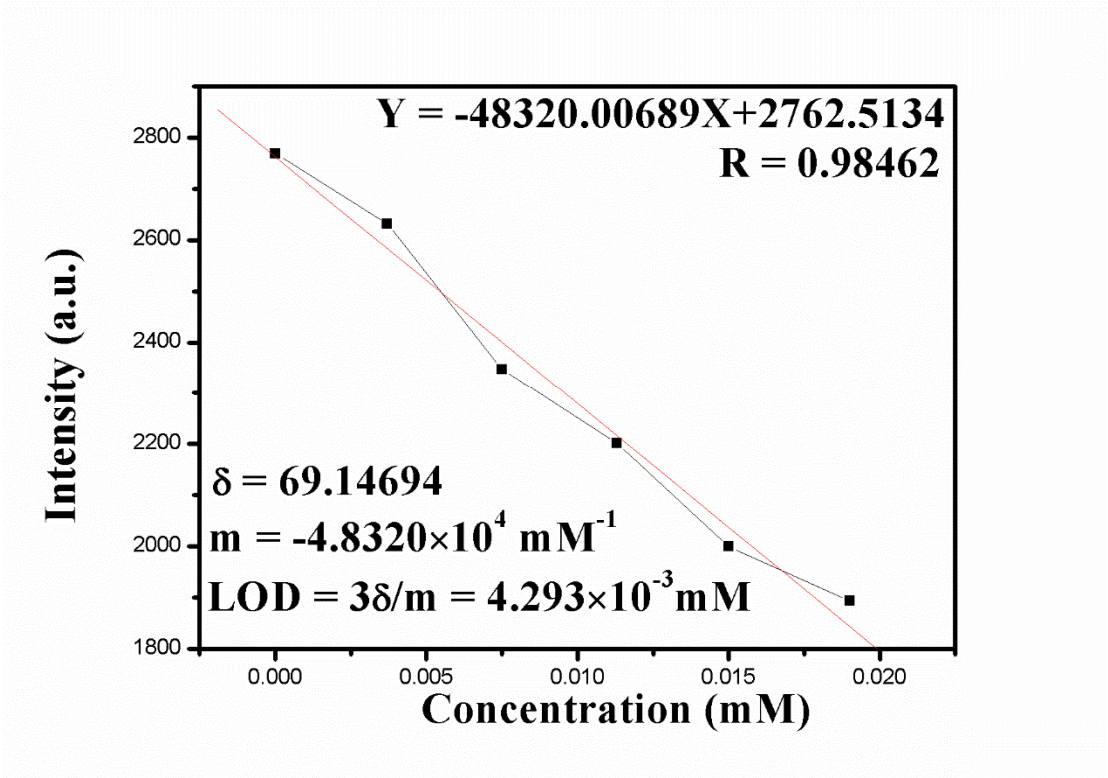
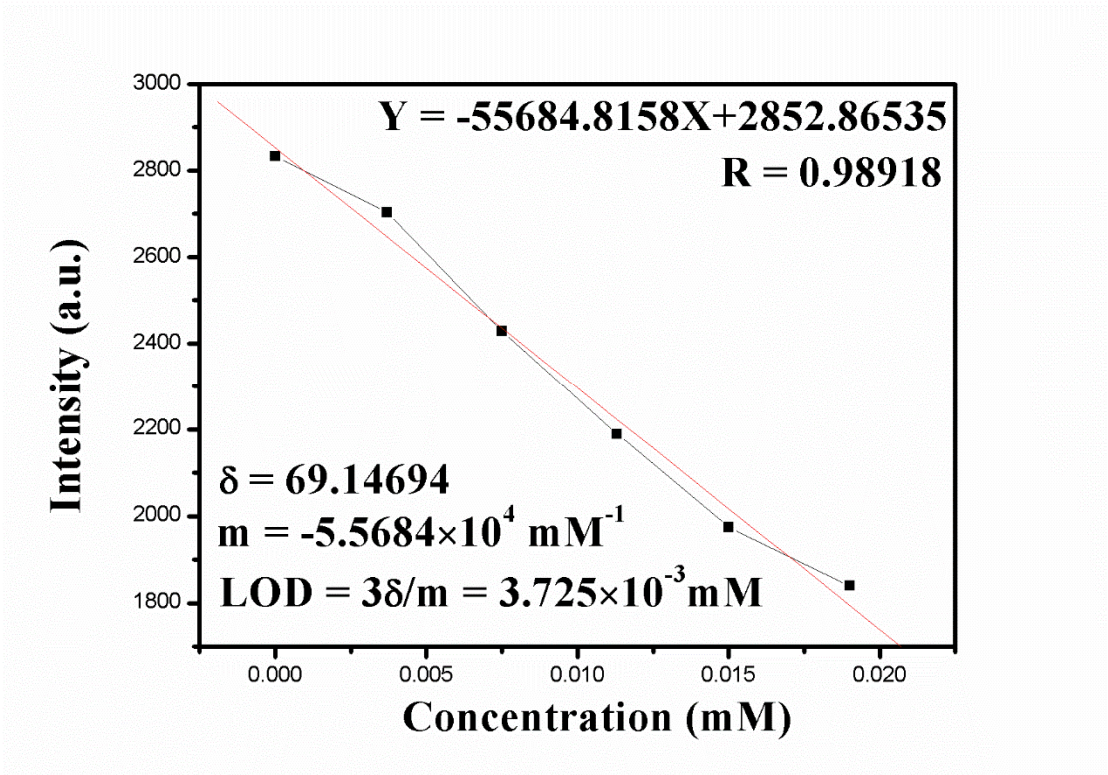


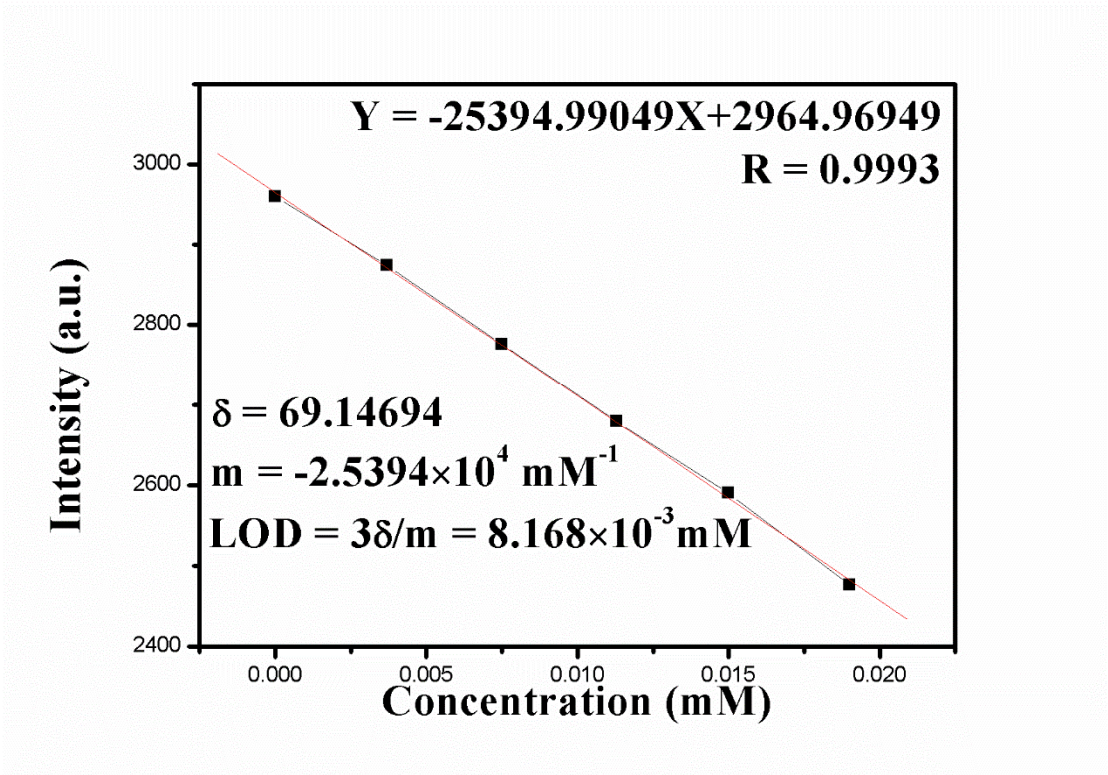
Figure S6 The PXRD patterns of the samples after being immersed in different solvents for about 4 d and that of the bulk sample (**1**).



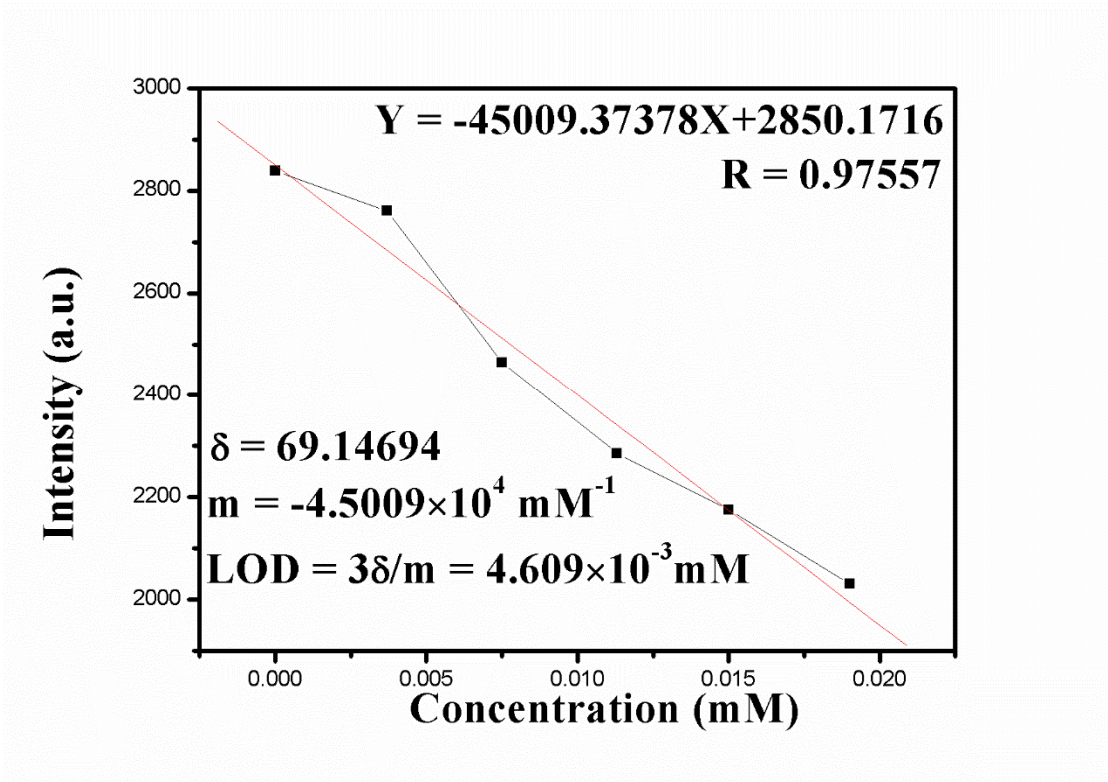
A


Y = -55684.8158X+2852.86535
R = 0.98918
δ = 69.14694
m = -5.5684×10^4 mM^-1
LOD = 3δ/m = 3.725×10^-3 mM
Intensity (a.u.)
Concentration (mM)
3000
2800
2600
2400
2200
2000
1800
0.000
0.005
0.010
0.015
0.020

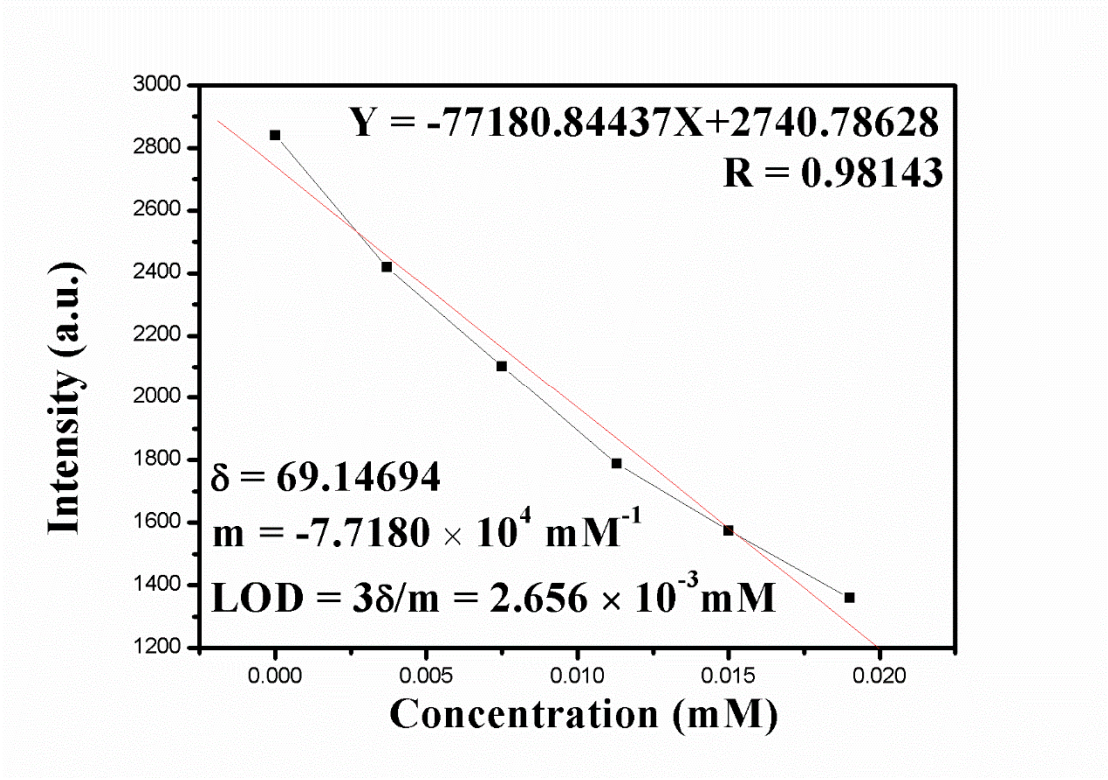
B


Y = -25394.99049X+2964.96949
R = 0.9993
δ = 69.14694
m = -2.5394×10^4 mM^-1
LOD = 3δ/m = 8.168×10^-3 mM
Intensity (a.u.)
Concentration (mM)
3000
2800
2600
2400
0.000
0.005
0.010
0.015
0.020

C


Y = -45009.37378X+2850.1716
R = 0.97557
δ = 69.14694
m = -4.5009×10^4 mM^-1
LOD = 3δ/m = 4.609×10^-3 mM
Intensity (a.u.)
Concentration (mM)
3000
2800
2600
2400
2200
2000
0.000
0.005
0.010
0.015
0.020

D


Y = -77180.84437X+2740.78628
R = 0.98143
δ = 69.14694
m = -7.7180 × 10^4 mM^-1
LOD = 3δ/m = 2.656 × 10^-3 mM
Intensity (a.u.)
Concentration (mM)
3000
2800
2600
2400
2200
2000
1800
1600
1400
1200
0.000
0.005
0.010
0.015
0.020

E

Figure S7 The best linear fitting of the fluorescence intensity of the aqueous suspensions of (**1**) (A-E) *versus* the NACs concentration (0 - 0.01875 mM). **A**: 2,6-DC-4-NP, **B**: 2-M-4-NA, **C**: 2-MO-5-NP, **D**: 4-NA, **E**: TNP.