Electronic Supplementary Information

From G-quartets to G-ribbon Gel by Concentration and Sonication Control

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1. Experiment detail

***Synthesis of 2', 3'-isopropylidene guanosine*.** To a suspension of guanosine (6.0 g, 21 mmol) in 200 mL of acetone was added 70% perchloric acid (3.0 mL). After 1.5 h, concentrated ammonium hydroxide (3.5 mL) was added to the reaction mixture. The mixture was stirred for 30 min, filtrated out, washed with water and dried under vacuo to give 5.5 g white solid. ^{1}H NMR (400 MHz, DMSO-d_6, 298 K) δ 10.64 (s, 1H), 7.91 (s, 1H), 6.48 (s, 2H), 5.92 (d, J = 2.7 Hz, 1H), 5.18 (dd, J = 6.2, 2.7 Hz, 1H), 5.11 – 4.89 (m, 2H), 4.11 (dd, J = 8.1, 5.0 Hz, 1H), 3.52 (dd, J = 13.4, 8.3 Hz, 2H), 1.51 (s, 3H), 1.31 (s, 3H).

***Synthesis of (N-adamantylcarbamoyl)propionic acid*.** To a solution of succinic anhydride (0.8 g, 8 mmol) in ethyl acetate (50 mL) was added a solution of 1-adamantylamine (1.2 g, 8 mmol) and triethylamine (1.1 mL, 8.8 mmol). The reaction mixture was stirred at room temperature for 30 min. Then the solid was separated, dissolved in water (25 mL) and acidified by addition of 25 wt% HCl (25 mL) until pH~2. The aqueous solution was extracted with CH_2Cl_2 (3 × 100 mL) and the combined organic phases gave corresponded product (957 mg, 49.5%). ^{1}H NMR (400 MHz, DMSO-d_6, 298 K) δ 11.99 (s, 1H), 7.29 (s, 1H), 2.35 (t, J = 6.8 Hz, 2H), 2.26 (t, J = 6.9 Hz, 2H), 1.98 (s, 3H), 1.89 (d, J = 2.5 Hz, 6H), 1.60 (s, 6H). ^{13}C NMR (101 MHz, DMSO-d_6, 298k): δ 174.05, 170.28, 50.57, 41.07, 36.12, 30.81, 29.37, 28.86.

2. Additional CD spectra

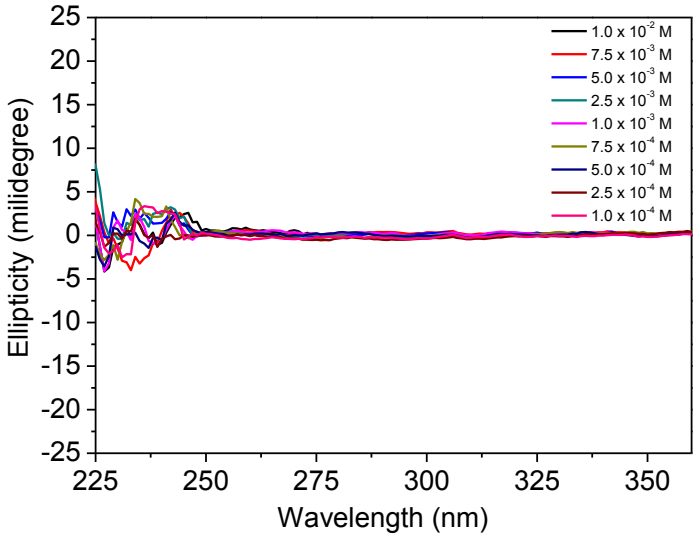


Fig. S1 CD spectra of **1** in DMSO under different concentrations.

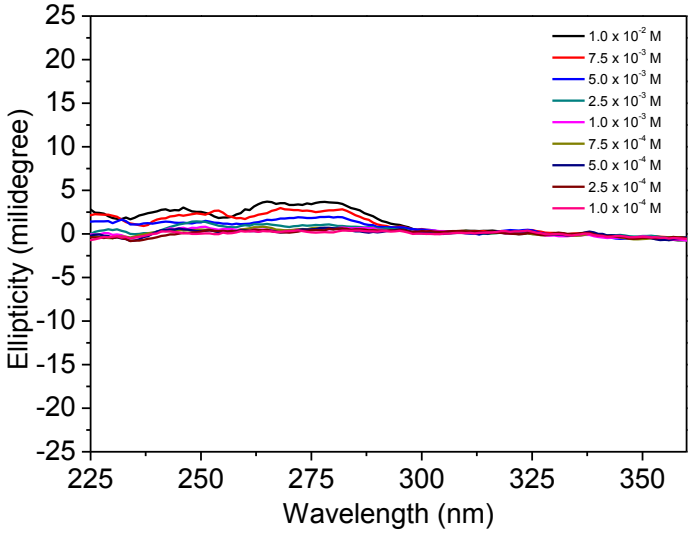


Fig. S2 CD spectra of **1** in methanol under different concentrations.

3. ^{1}H NMR spectra

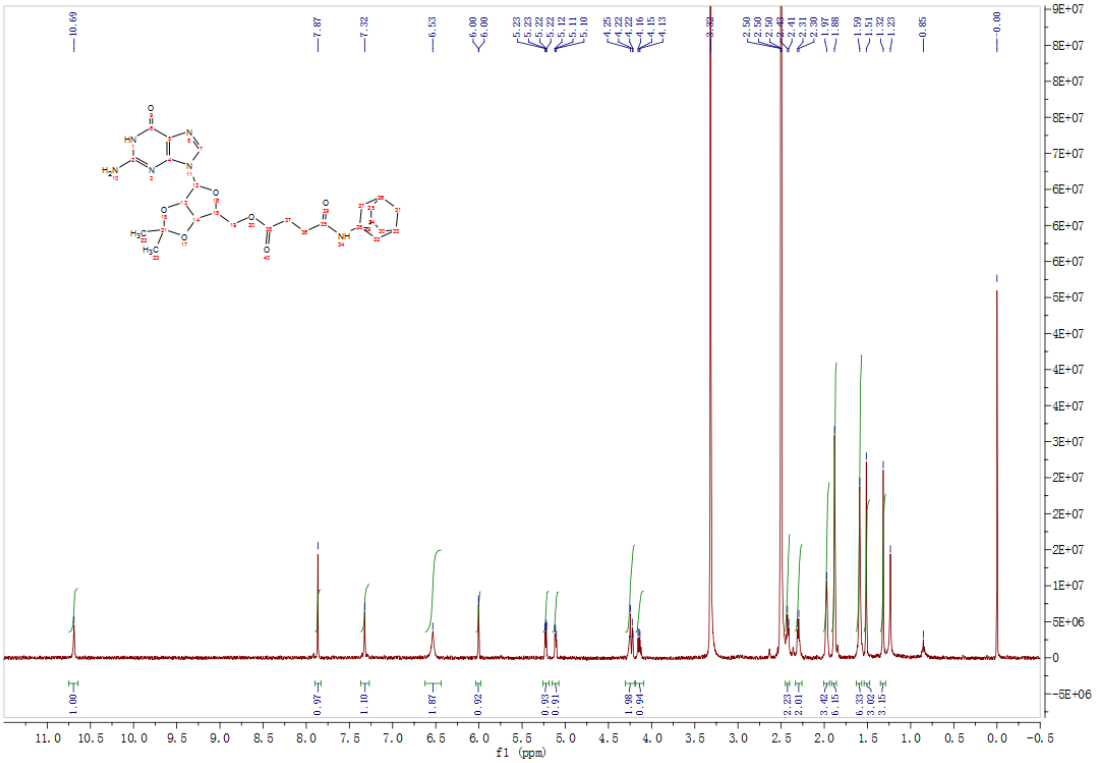


Fig. S3 ^{1}H NMR spectra of **1** in *d*6-DMSO.

4. Additional structural charactor of self-assembly of 1 and 2

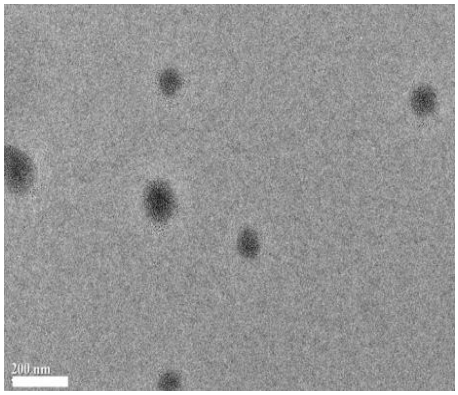


Fig. S4 TEM image of the precipitation of **2** from acetonitrile

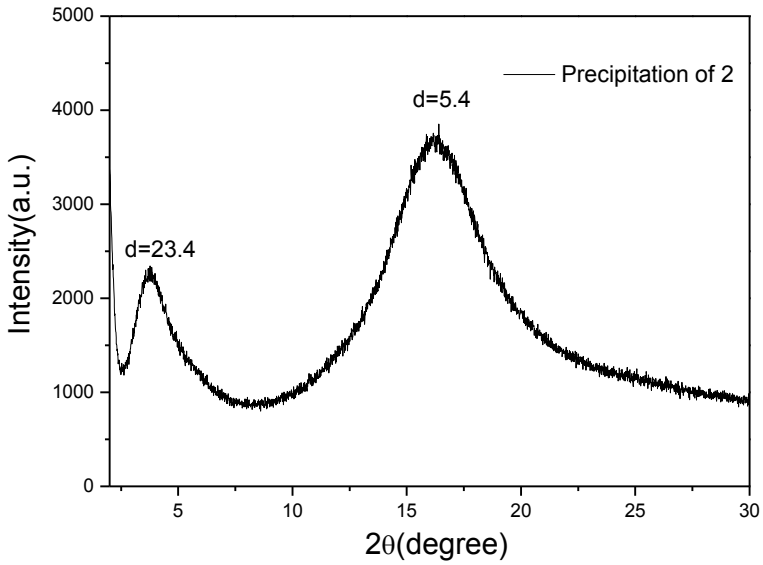


Fig. S5 Powder X-ray diffraction patterns of the precipitation of 2 in CH_3CN at room temperature.

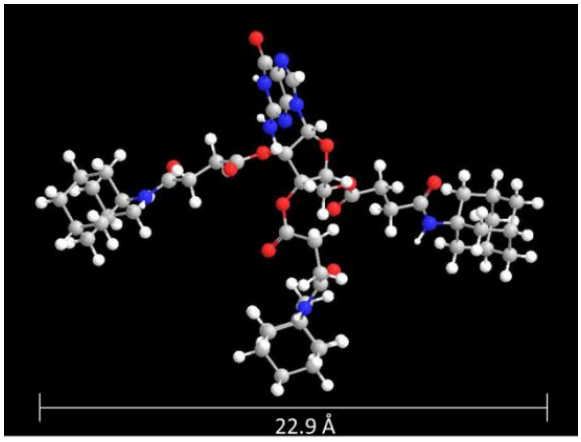
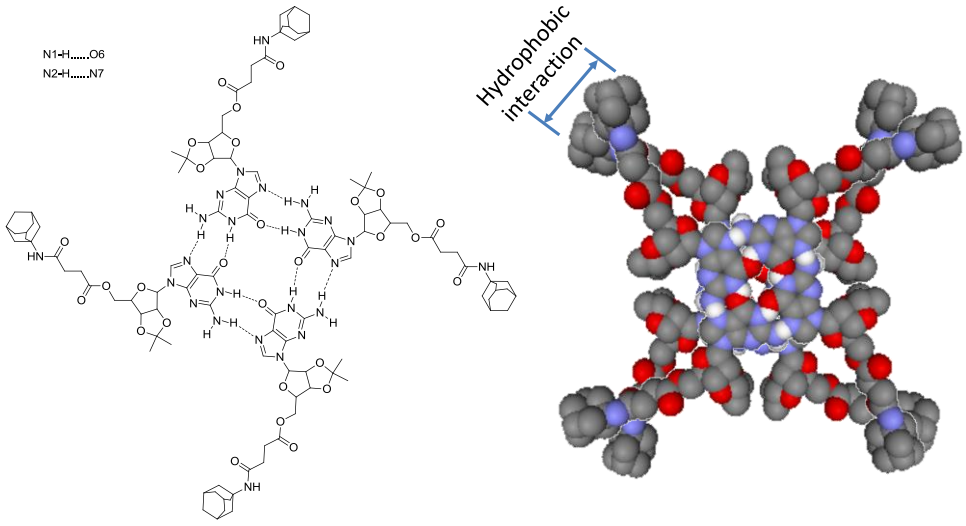
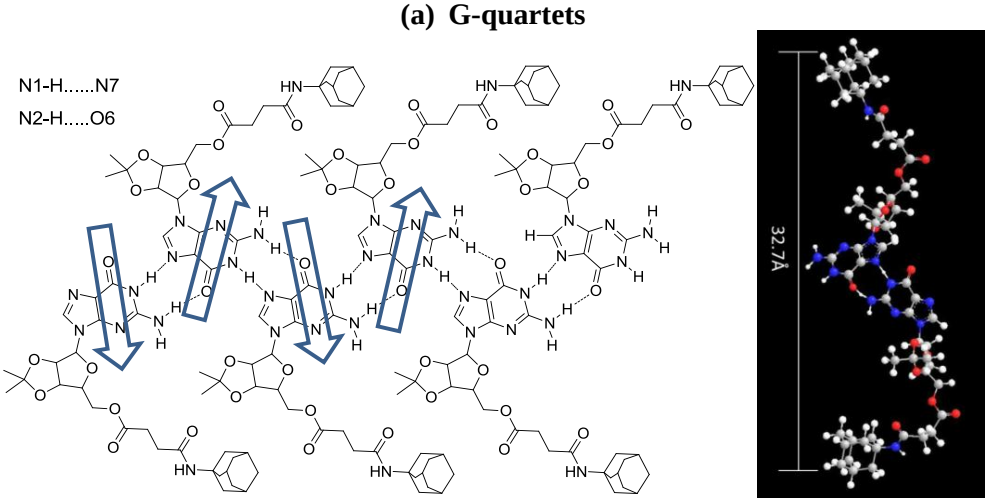


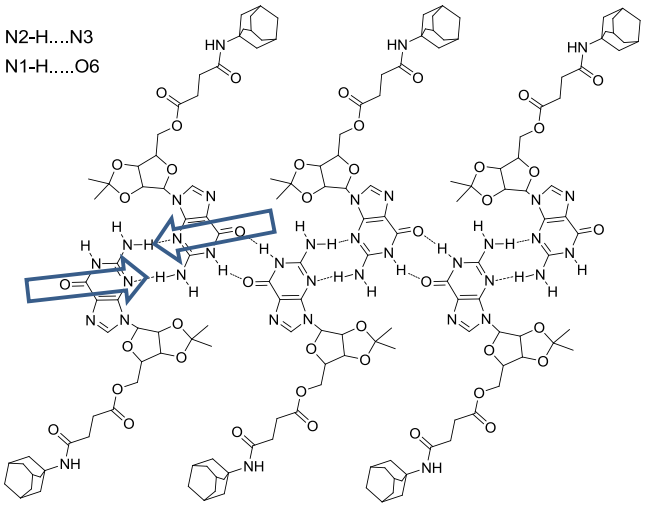
Fig. S6 Molecular structure and size of **2**.



(a) G-quartets



(b) G-ribbon (Type A)



(c) G-ribbon (Type B)

Fig. S7 The proposed self-assembly structure by molecules of **1,** the arrows are polarized direction by self-assembly