Supplementary Material (ESI) for Chemical Communications

Ligand inducible assembly of a DNA tetrahedron

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Supporting information

The contents of supporting information:

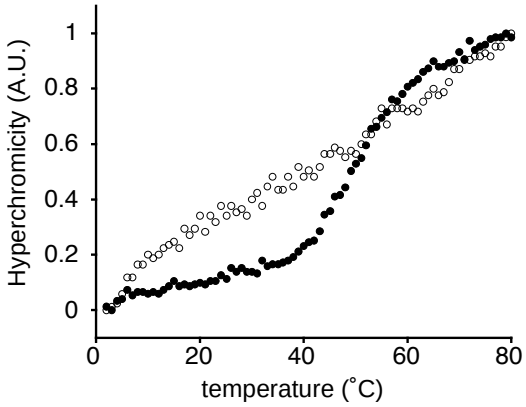

Figure S1. (a) Thermal melting profiles of DNA duplex **D1**/**D2** (3 μM) in the presence of **NCD** (18 μM). The absorbance at 260 nm was measured in 10 mM Na·cacodylate buffer (pH 7.0) containing 100 mM NaCl. Key: The plots in the absence of **NCD**, open circles; plots in the presence of **NCD**, filled circle.

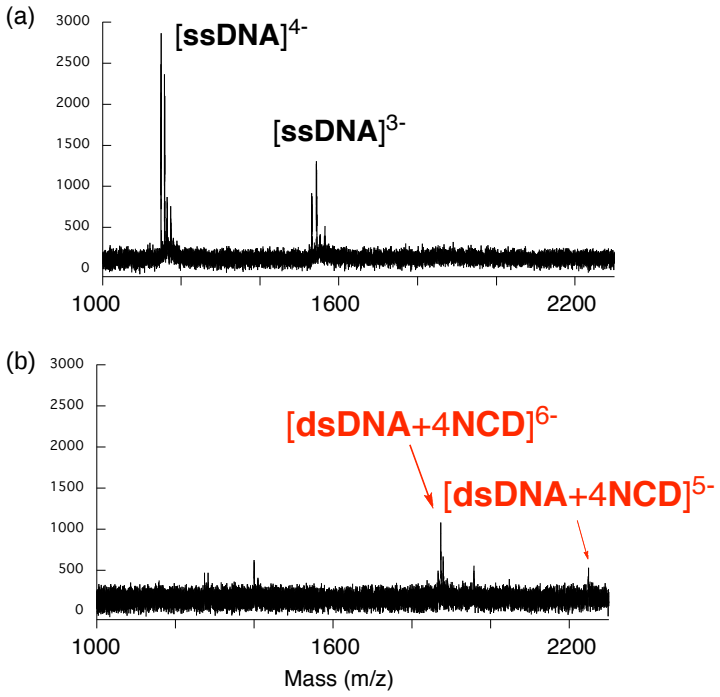

Figure S2. Cold-spray ionization time of flight mass spectra of **D1**/**D2** in the presence and absence of **NCD**. Samples containing 20 μM duplex DNA in 50% aqueous methanol and ammonium acetate (100 mM) were cooled at –10 ˚C during the injection with a flow rate 10 μL/min^{-1}. Orifice voltage; –65 V. Key: (a) Without **NCD**; (b) 120 μM **NCD**.

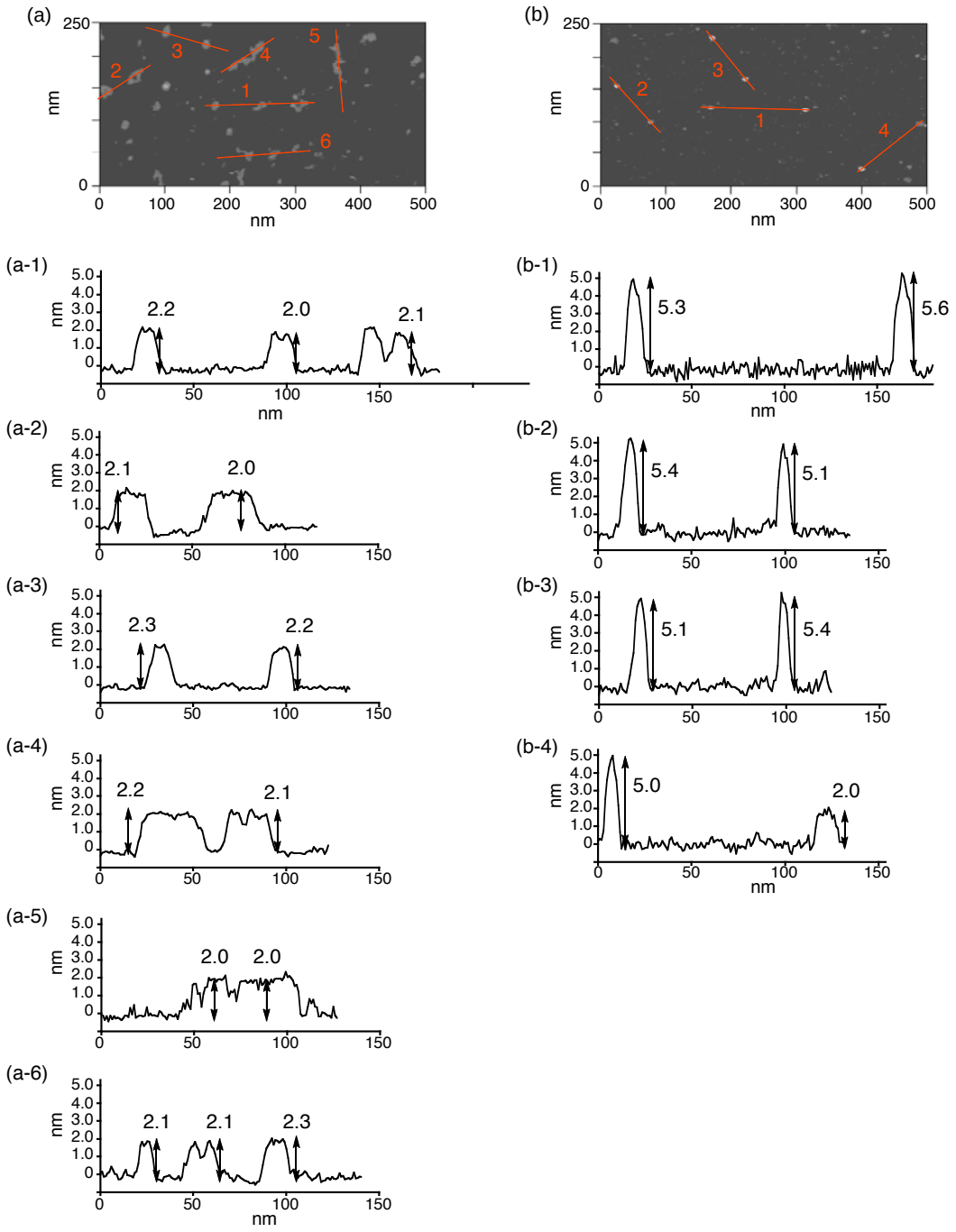

Figure S3. Line cross-section analysis of the AFM images of the assembly **Tet1** in the absence (a, the same image in Fig. 3b) and presence (b, the same image in Fig. 3d) of **NCD**. Averaged heights of the structures in (a) and (b) were 2.1 ± 0.1 nm and 5.3 ± 0.2 nm, respectively.

Scheme S1. ODN sequences for tetrahedron formation

T1: AGGCAGTTGAGACGAACATTCCTAAGTCTGAAATTTATCACCCGCCATAGTAGACGTATCACC

T2: GGTGATAAAACGTGTAGCAAGCTGTAATCGACGGGAAGAGCATGCCCATCCACTACTATGGCG

T3: CCTCGCATGACTCAACTGCCTGGTGATACGAGGATGGGCATGCTCTTCCCGACGGTATTGGAC

T4: CTTGCTACACGATTCAGACTTAGGAATGTTCGACATGCGAGGGTCCAATACCGACGATTACAG

T5: CTCGGATGACTCAACTGCCTGGTGATACGAGGATGGGCATGCTCTTCCCGAACGGTCGGC

T6: CTTGCTACACGATTCAGACTTAGGAATGTTCG

T7: CATCCGAGGCCGACCGTACGATTACAG

T8: CATCGGAGGCGGACGGTACGATTACAG

Assembly of DNA tetrahedron.

A set of ODNs (**T1**+**T2**+**T5**+**T6**+**T8** for **Tet1** and **T1**+**T2**+**T5**+**T6**+**T7** for **Tet2**, 0.2 μM each) in 10 mM Tris (pH 7.0) and 5 mM $MgCl_2$ were annealed (from 95 ˚C for 2 min to 4 ˚C over 3 min). Samples containing 5% glycerol were electrophoresed through 8% naturing PAGE (29:1, 150 V, 50 min, 15 ˚C).

AFM measurements.

A set of ODNs **Tet1** (10 μL, 20 nM in 10 mM Tris (pH 7.0) and 10 mM $MgCl_2$) in the presence and absence of **NCD** (1 μM) was spotted on a freshly cleaved mica pretreated with 10 mM $NiCl_2$. The sample was incubated overnight (18 h), and was washed with 100 μL of the same buffer. Buffer was added and the sample was scanned in AC mode on MFP-3D-Bio (Asylum Research, Santa Barbara, CA) with BL-AC40TS-C2 cantilever (Olympus).