Supporting information for Submission to *Dalton Trans.*

Double-strand DNA cleavage by copper complexes of 2,2'-dipyridyl with guanidinium/ammonium pendants

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Fig. S5 Agarose gel showing cleavage of 38 μM pBR322 DNA incubated with 150 μM of compounds in 20 mM HEPES buffer, pH 7.2 at 37 ^{o}C for 1h. Lane C: DNA control, Lane 1: DNA + L^1, Lane 2: DNA + L^2, Lane 3: DNA + $Cu(ClO_4)_2$, Lane 4: DNA + **1**, Lane 5: DNA + **2**.

Fig. S6 Agarose gel showing cleavage of 38 μM pBR322 DNA incubated with 150 μM of complex in 20 mM HEPES buffer, pH 7.2 at 37 ^{o}C for 1h for **1** and **2**. Lane C: DNA control, Lane 1: DNA + **1**, Lanes 2-4: DNA + **1** +100U/mL, 500U/mL, 1,000U/mL Catalase, Lane 5: DNA + **2**, Lanes 6-8: DNA + **2** +100U/mL, 500U/mL, 1,000U/mL Catalase.

Fig. S7 Kinetics for the cleavage of plasmid pBR322 DNA by **3** (150, 300, 500, 1000 μM) in 20 mM HEPES buffer, pH 7.2 at 37 ^{o}C. The samples were run on a 0.9 % agarose gel and stained with ethidium bromide.

Fig. S8 Agarose gel showing cleavage of 38 μM pBR322 DNA incubated with 150 μM of complex in 20 mM buffer (MES, MOPSO, TRIS, CHES or CAPS according to pH) at 37 ^{o}C for **1** after 0.5h incubation.

Fig. S9 Titration condition: 50 mM Tris-HCl (50 Mm $NaClO_4$)at pH 7.2, [complex]=25 μM, initial [NaCl] = 200 mM, drop 1 μL NaCl solution to the buffer each time (it means that the concentration of NaCl increase 50 μM).

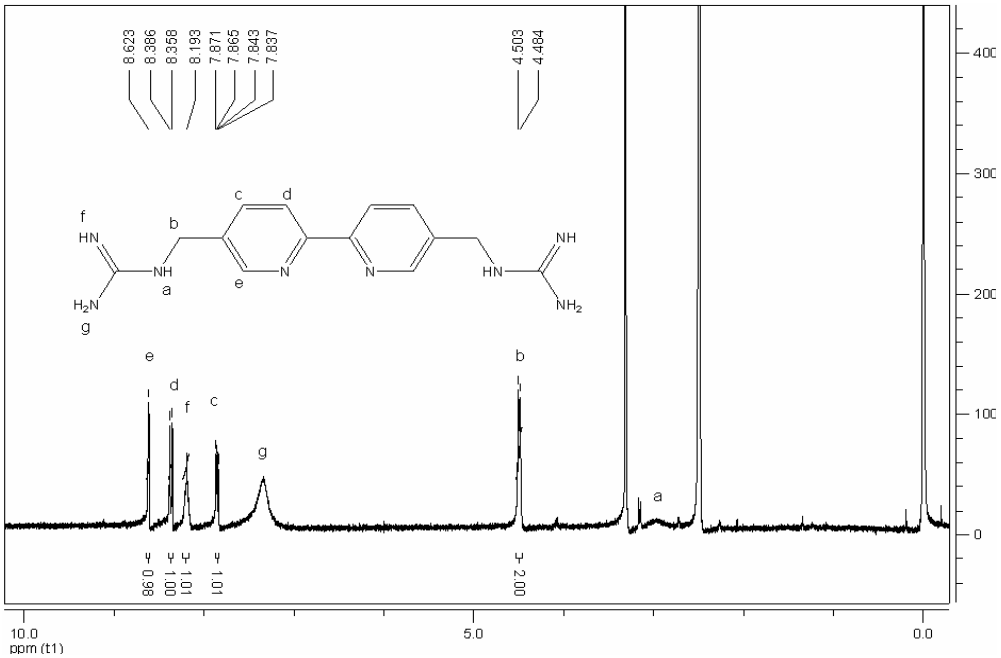


Figure S1 ^{1}H NMR spectrum of L^{1}.

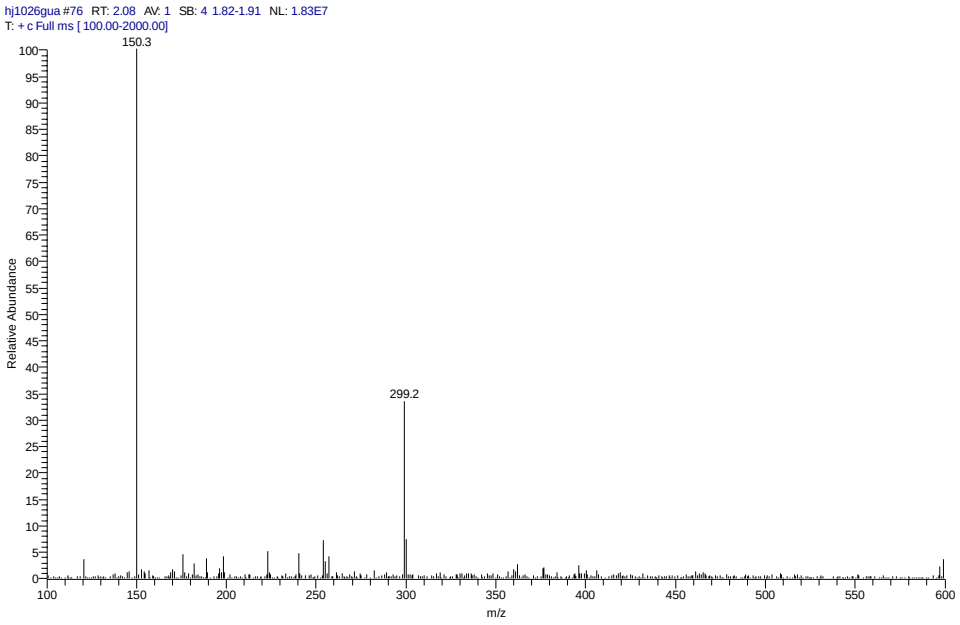


Fig. S2 ESI-MS spectrum of L^{1}

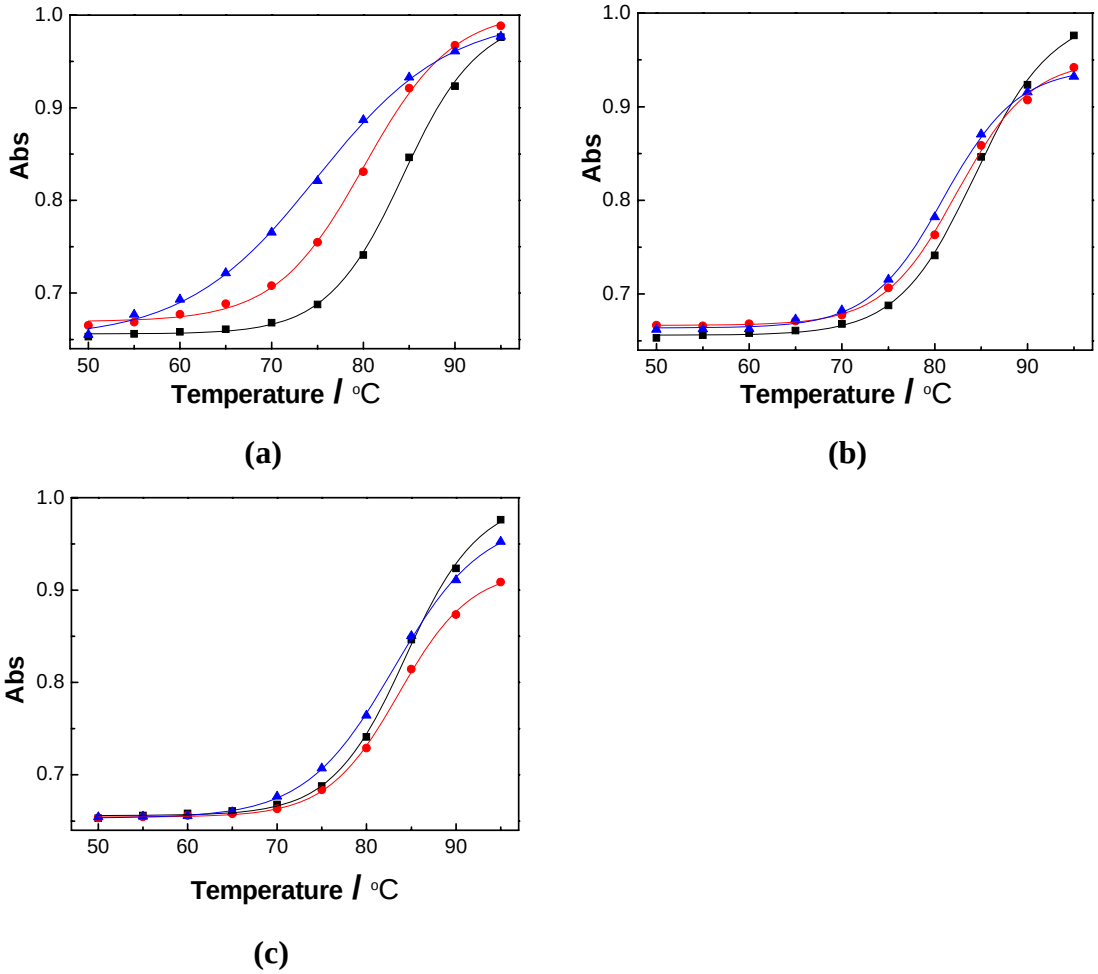
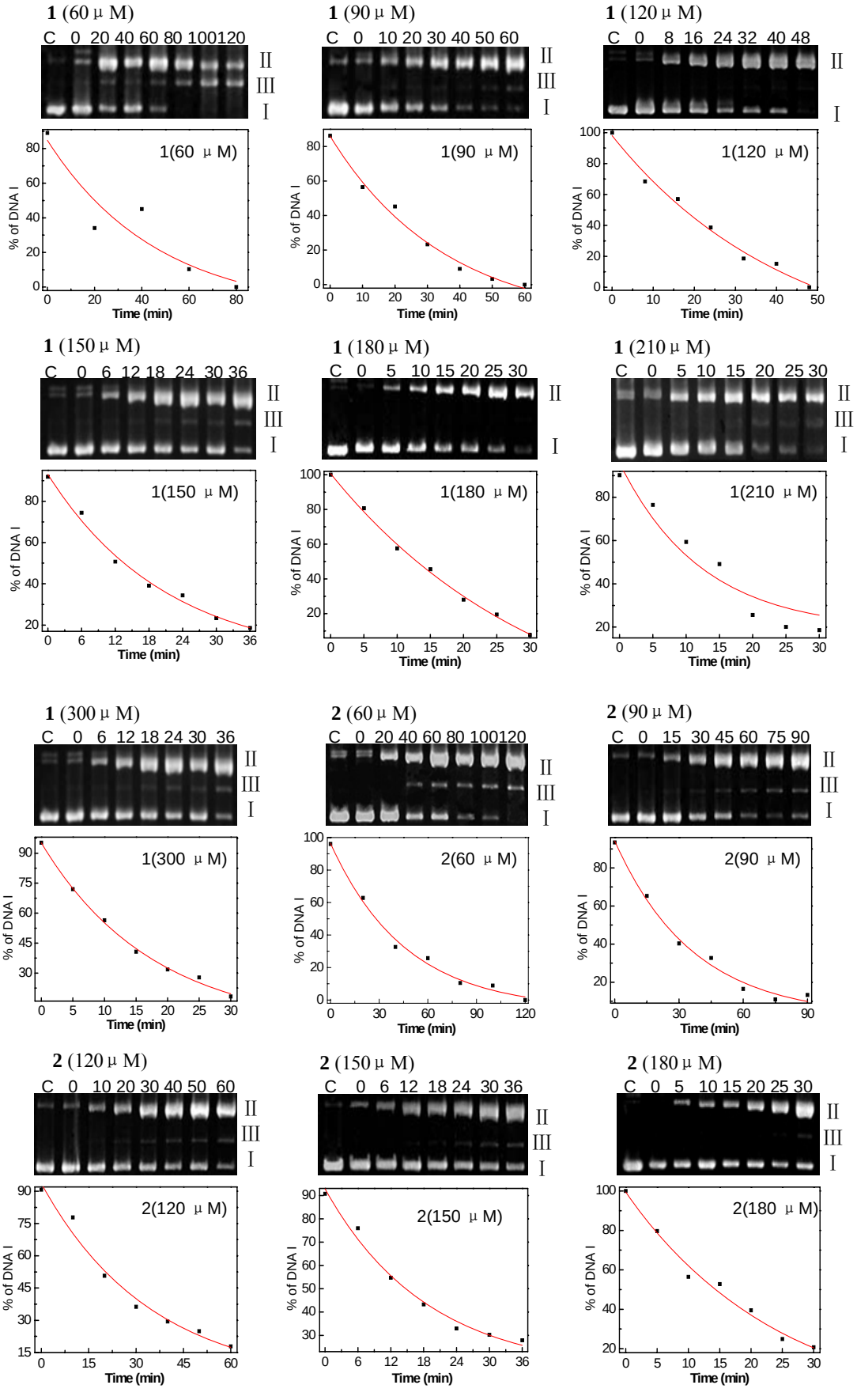


Fig. S3 T_m curves of 100 μM CT DNA in 20 mM pH 8.0 HEPES buffer, 0.1 M $NaClO_4$, in each graph containing no Cu complex(■), 10 μM of **1** (a), **2** (b) and **3** (c) (●), 20 μM of **1** (a), **2** (b) and **3** (c) (▲).



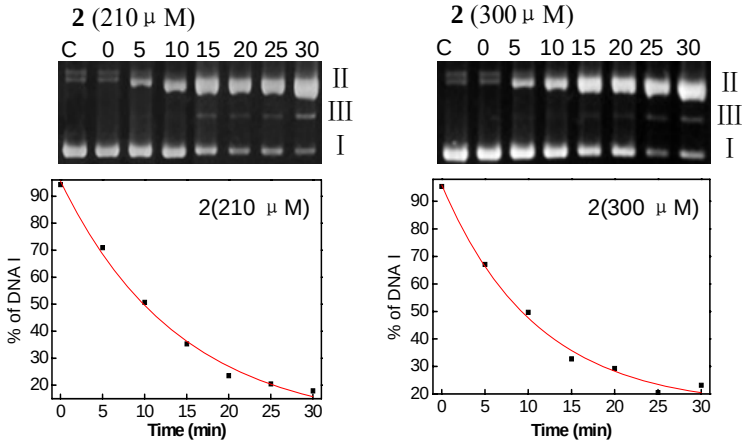
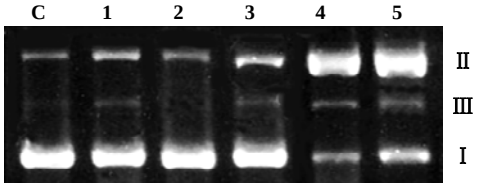


Fig. S4 Agarose gel electrophoresis (a) and corresponding time course plots (b) showing cleavage of pBR322 DNA by complex **1** and **2** (60-300 μM) in 20 mM pH 7.2 HEPES buffer at 37 ^{o}C. In plans, lane C means DNA control, in graphs, symbol ■ indicates the experimental data for the SC forms. The lines connecting them are single exponential fits.

Table S1 k_{obs} for the cleavage of pBR322 DNA by different concentrtions of complexes.

Concentration of complex / μM	k_{obs} of **1** / h^{-1} (R^2)	k_{obs} of **2** / h^{-1} (R^2)
60	1.91 (0.876)	1.49 (0.992)
90	2.37 (0.989)	1.86 (0.981)
120	2.73 (0.963)	2.24 (0.968)
150	3.06 (0.997)	2.53 (0.994)
180	3.21 (0.972)	2.60 (0.935)
210	3.32 (0.925)	2.81 (0.956)
300	3.41 (0.996)	3.07 (0.977)



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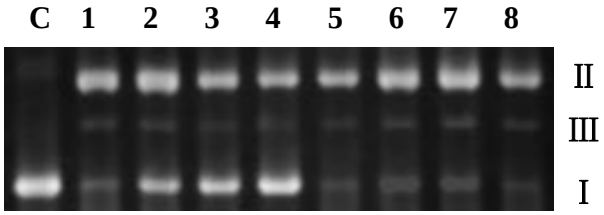

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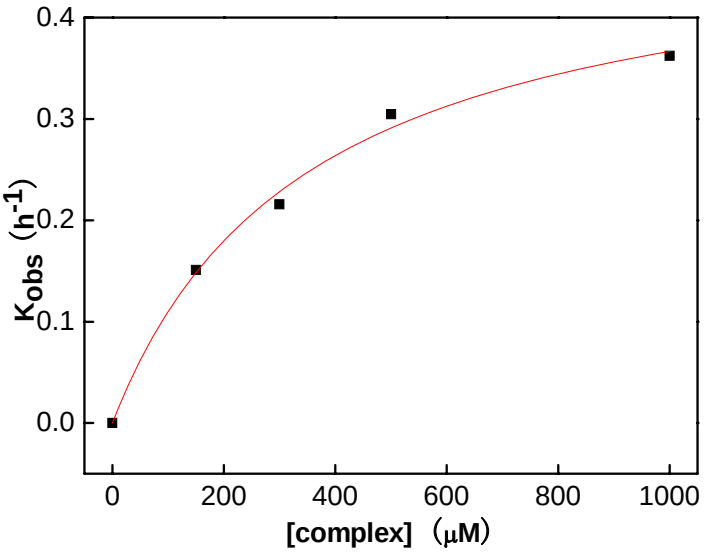

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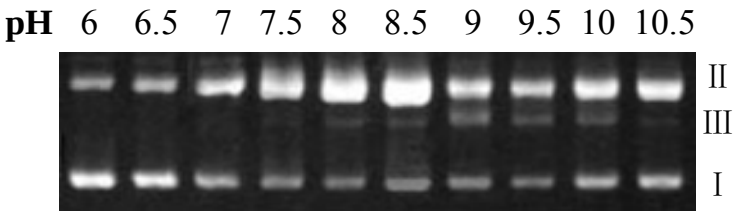

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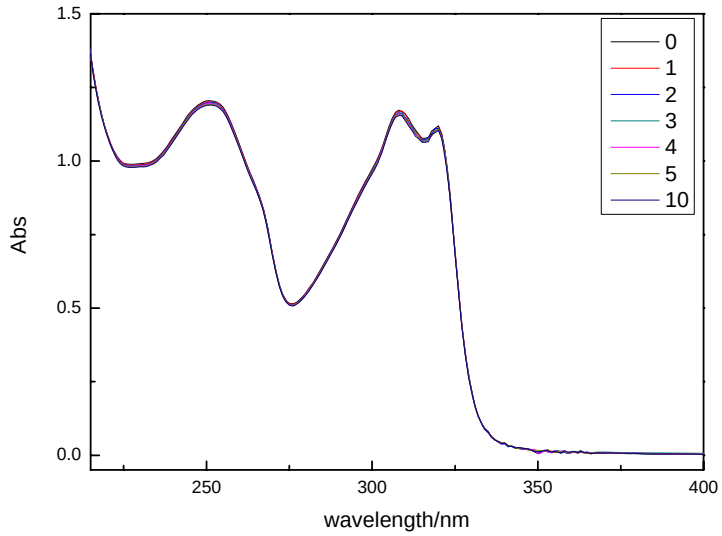

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