

DNA/BSA binding, antidiabetic and antioxidant studies of copper(II) complexes derived from *ONO*-tridentate Schiff bases and diimines as auxiliary ligand

Segun D. Oladipo^{a*}, Adesola A. Adeleke^b, Kolawole A. Olofisan^c, Bernard Omondi^b, and Robert C. Luckay^{a*}

^aDepartment of Chemistry and Polymer Science, Stellenbosch University, Private Bag X1, Matieland 7602, South Africa

^bSchool of Agriculture and Science, Discipline of Chemistry, University of Kwazulu-Natal, Durban, South Africa

^cDepartment of pharmacology, University of Free State, Bloemfontein 9300, South Africa

*Corresponding authors: S. D. Oladipo (segun.oladipo@oouagoiwoye.edu.ng) and R.C. Luckay (rluckay@sun.ac.za)

Supplementary information

Table of contents

<u>Figures</u>	<u>Page</u>
Figure S1: FT-IR spectrum for 1	3
Figure S2: FT-IR spectrum for 2	4
Figure S3: FT-IR spectrum for 3	5
Figure S4: FT-IR spectrum for 4	6
Figure S5: FT-IR spectrum for 5	7
Figure S6: FT-IR spectrum for 6	8
Figure S7: Electronic absorption spectra showing the d-d transitions of complexes 1- 6	9
Figure S8: EPR spectra of complexes 5 - 6	10
Figure S9: Mass spectrum for 1	11
Figure S10: Mass spectrum for 2	12
Figure S11: Mass spectrum for 3	13
Figure S12: Mass spectrum for 4	14
Figure S13: Mass spectrum for 5	15
Figure S14: Mass spectrum for 6	16

Figure S15: Electronic absorption spectrum of complex 1 in the absence (dashed line) and the presence of different concentrations of ctDNA	17
Figure S16: Electronic absorption spectrum of complex 2 in the absence (dashed line) and the presence of different concentrations of ctDNA	18
Figure S17: Electronic absorption spectrum of complex 3 in the absence (dashed line) and the presence of different concentrations of ctDNA	19
Figure S18: Electronic absorption spectrum of complex 4 in the absence (dashed line) and the presence of different concentrations of ctDNA	20
Figure S19: Electronic absorption spectrum of complex 6 in the absence (dashed line) and the presence of different concentrations of ctDNA	21
Figure S20: Electronic absorption spectrum of complex L1 in the absence (dashed line) and the presence of different concentrations of ctDNA	22
Figure S21: Electronic absorption spectrum of complex L2 in the absence (dashed line) and the presence of different concentrations of ctDNA	23
Figure S22: Electronic absorption spectrum of complex L3 in the absence (dashed line) and the presence of different concentrations of ctDNA	24
Figure S23: Electronic Absorption Spectra of BSA in the absence (dashed line) and the presence of different concentrations of complex 1 .	25
Figure S24: Electronic Absorption Spectra of BSA in the absence (dashed line) and the presence of different concentrations of complex 2 .	26
Figure S25: Electronic Absorption Spectra of BSA in the absence (dashed line) and the presence of different concentrations of complex 3 .	27
Figure S26: Electronic Absorption Spectra of BSA in the absence (dashed line) and the presence of different concentrations of complex 4 .	28
Figure S27: Electronic Absorption Spectra of BSA in the absence (dashed line) and the presence of different concentrations of complex 5 .	29

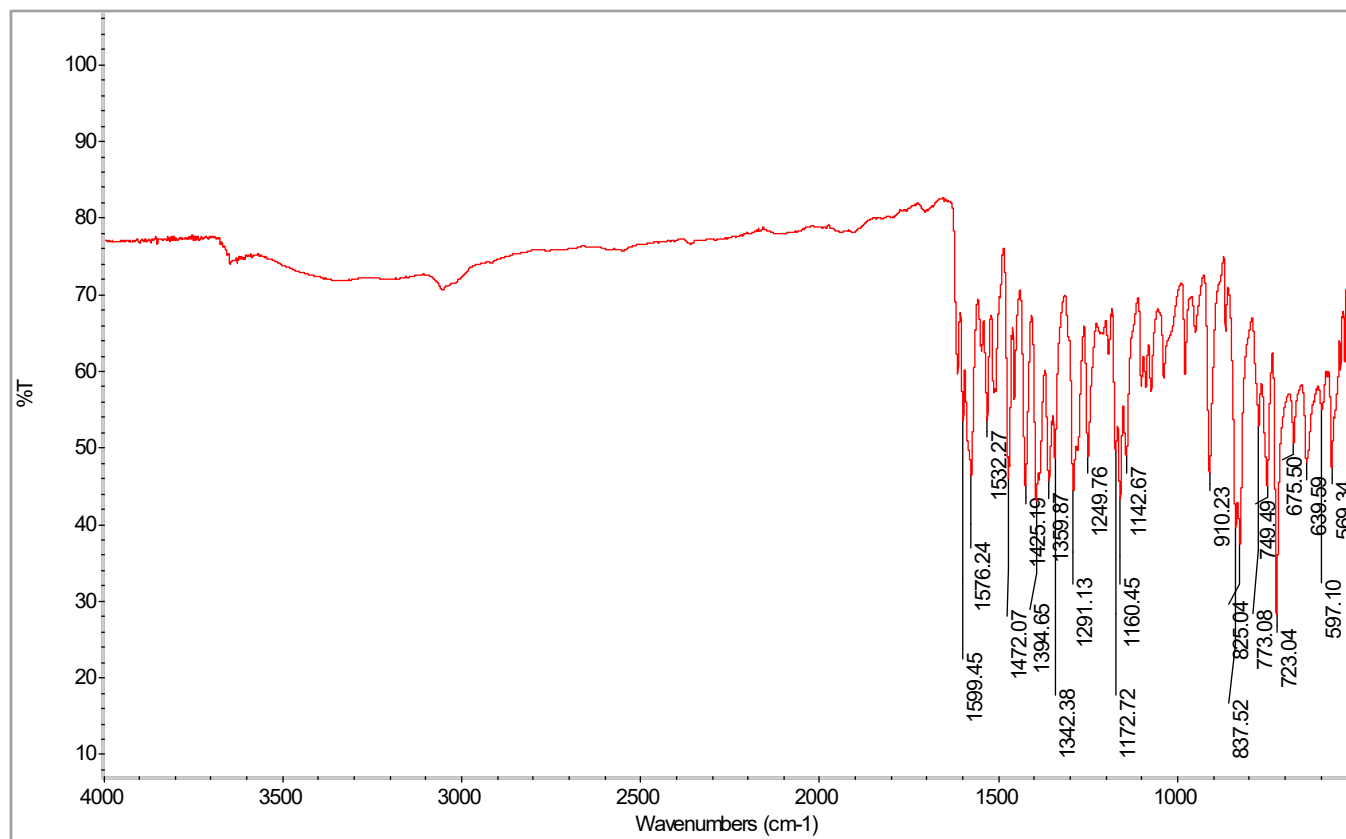


Figure S1: FT-IR spectrum of complex 1

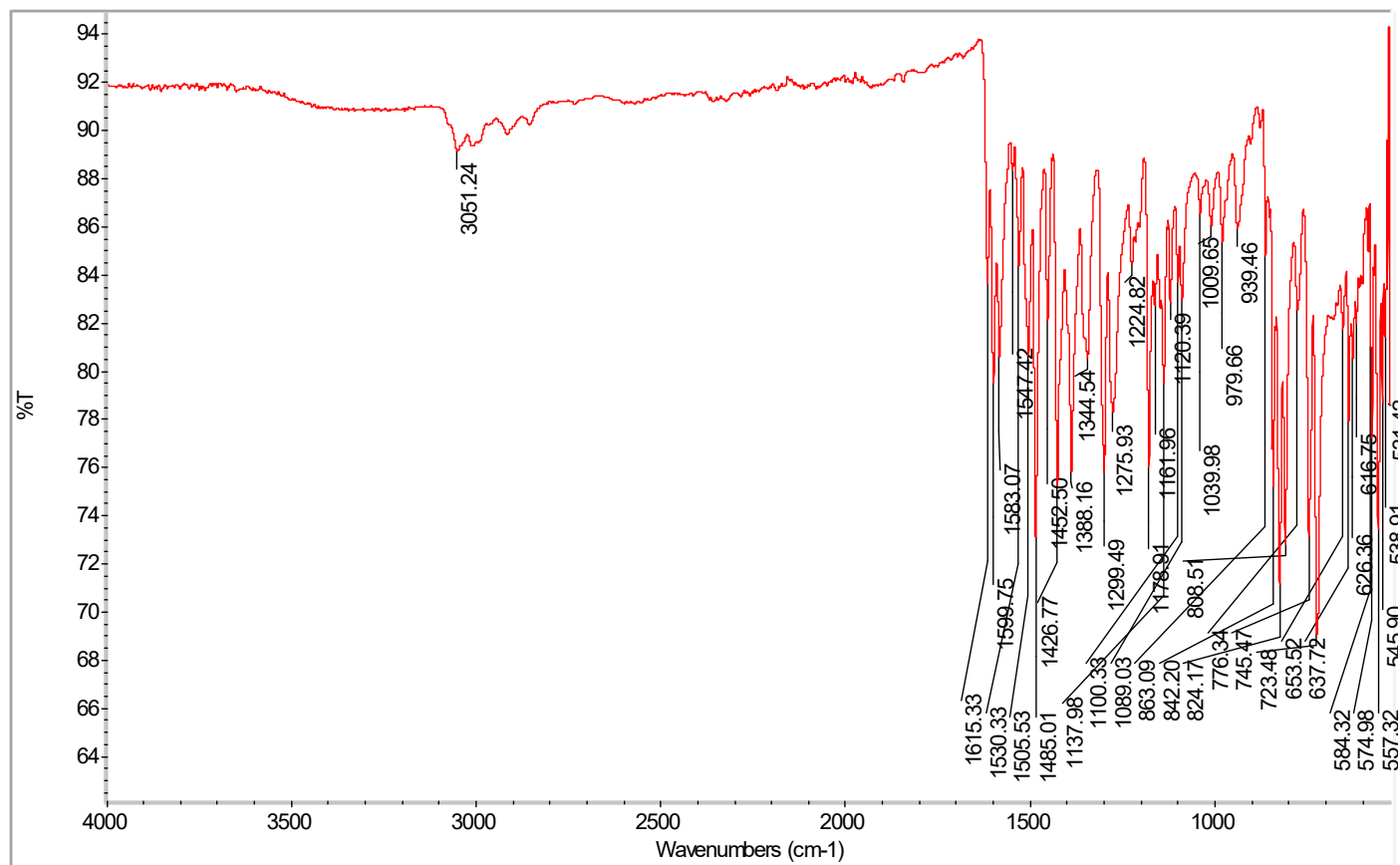


Figure S2: FT-IR spectrum of complex 2

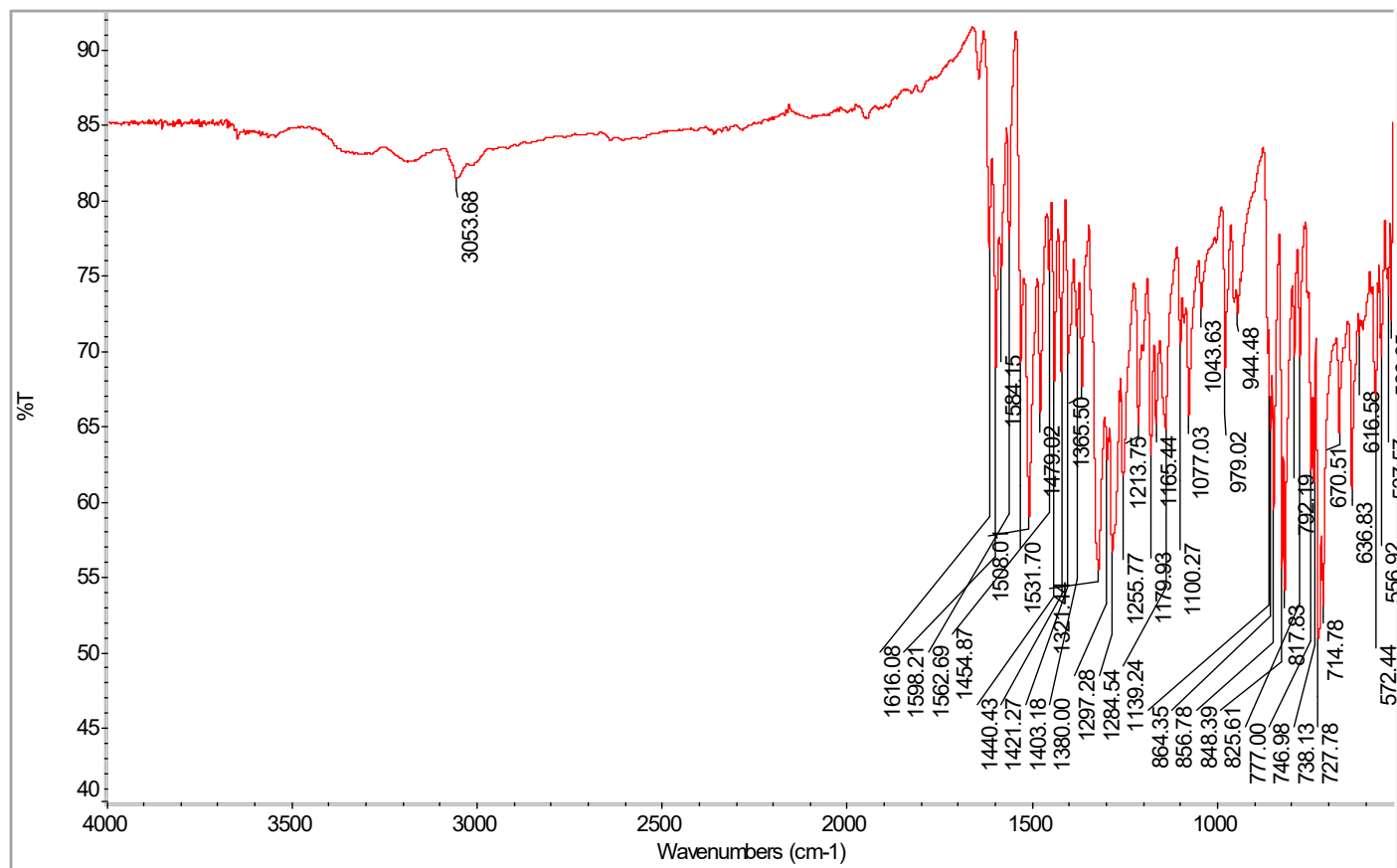


Figure S3: FT-IR spectrum of complex 3

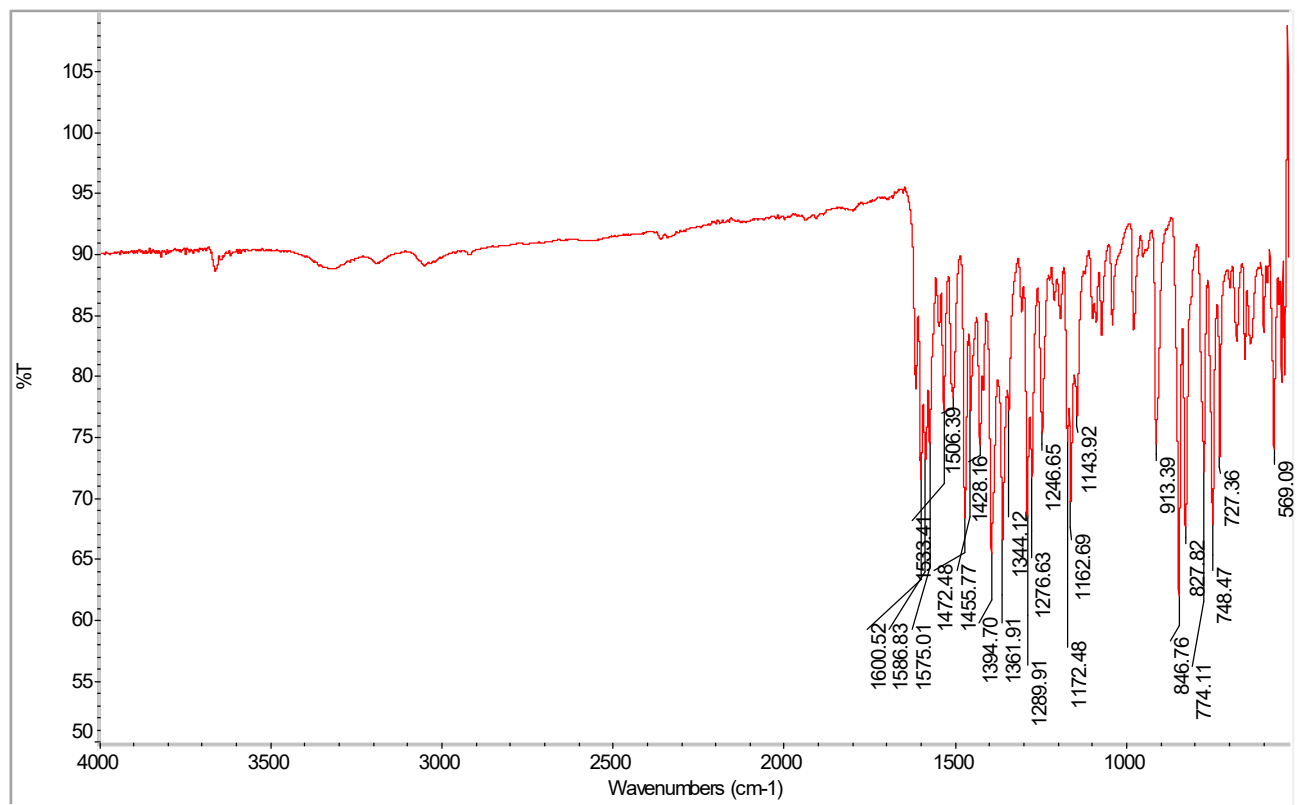


Figure S4: FT-IR spectrum of complex 4

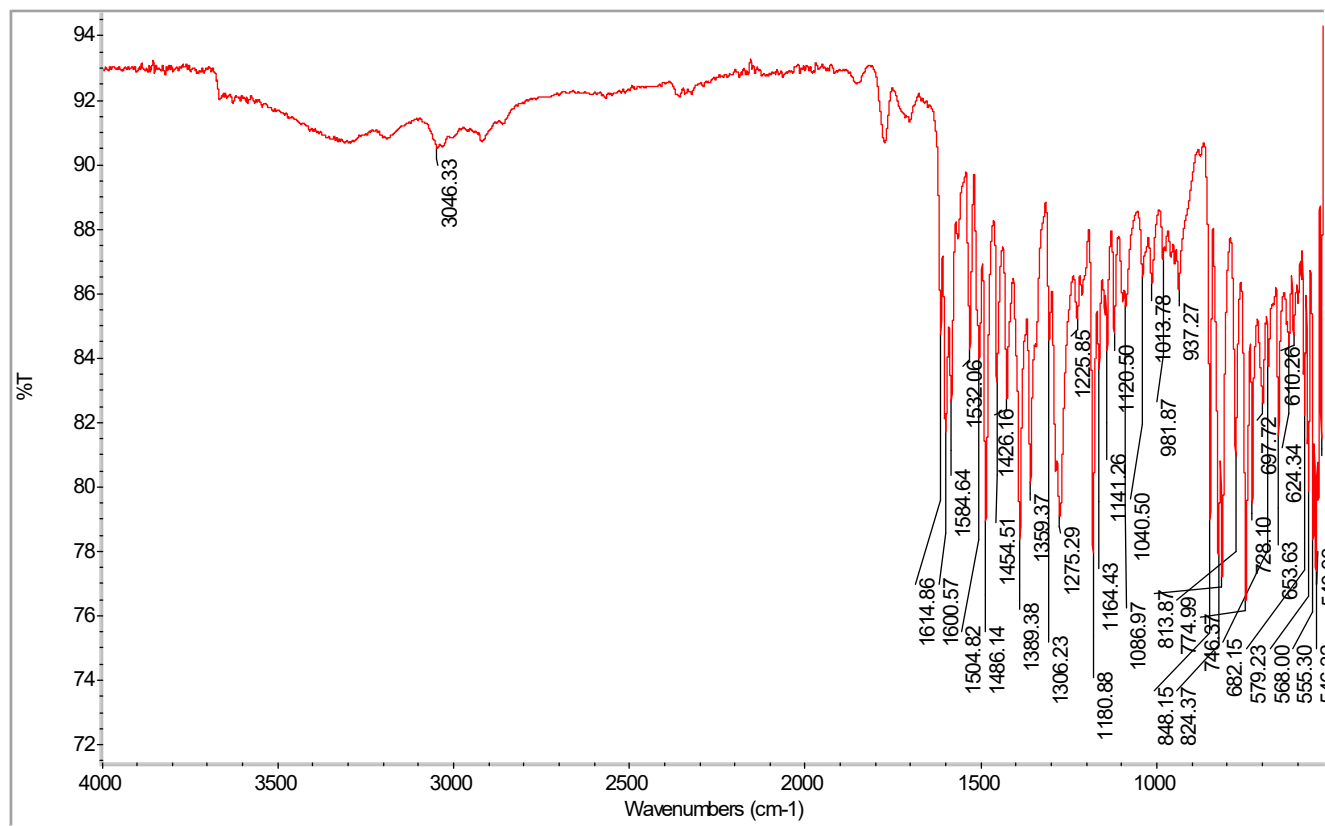


Figure S5: FT-IR spectrum of complex 5

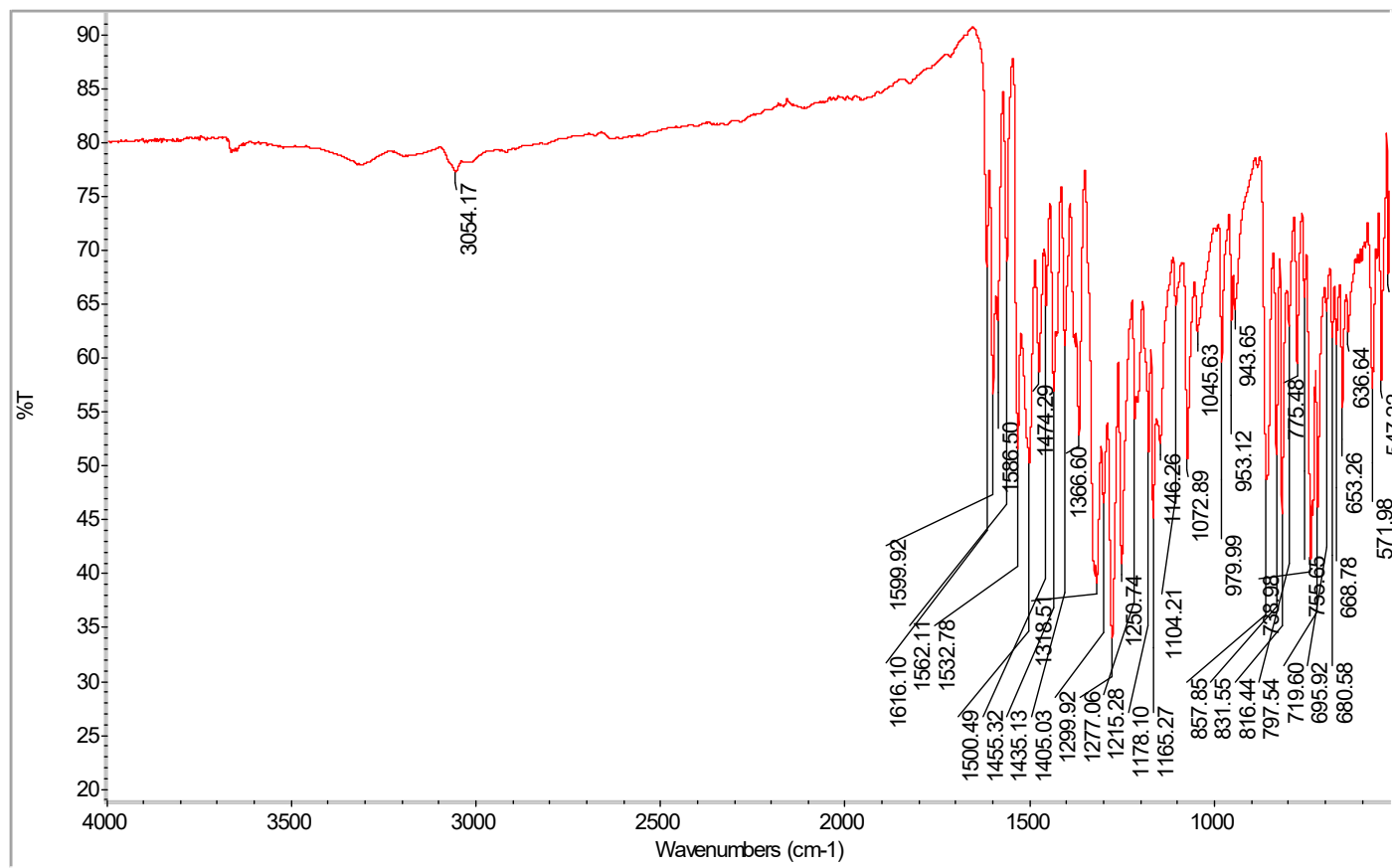


Figure S6: FT-IR spectrum of complex 6

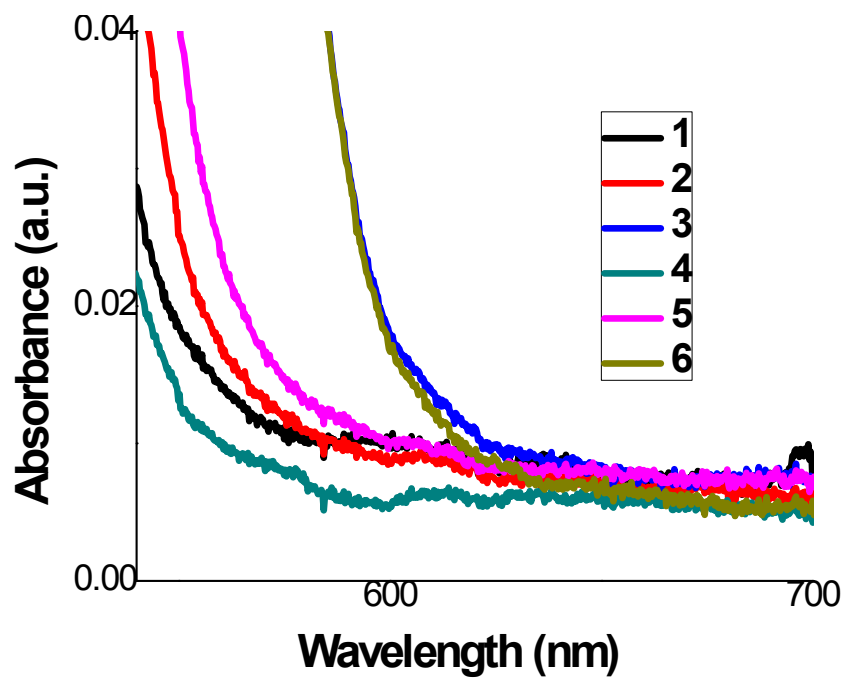


Figure S7: Electronic absorption spectra showing the d-d transitions of complexes **1 - 6**

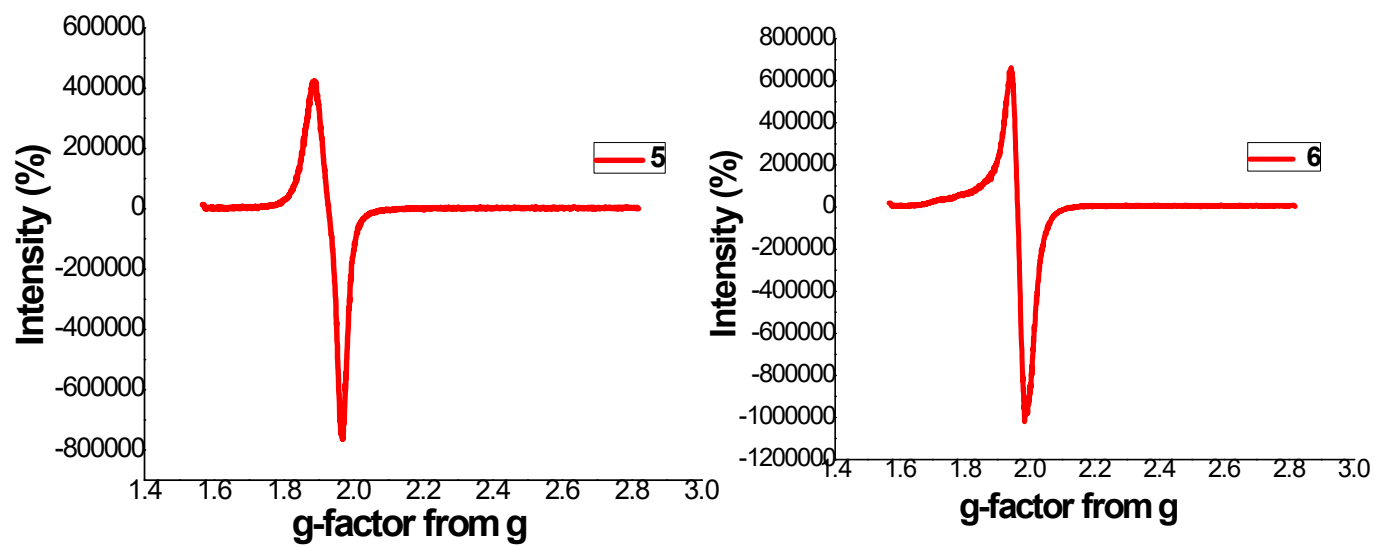


Figure S8: EPR spectra of complexes 5 - 6

Cu-HNC-P

HRMS_Direct_251107_6 8 (0.074) AM2 (Ar,19507.5,556.28,0.00,LS 5); Cm (8:12)

1: TOF MS ES+
5.54e4

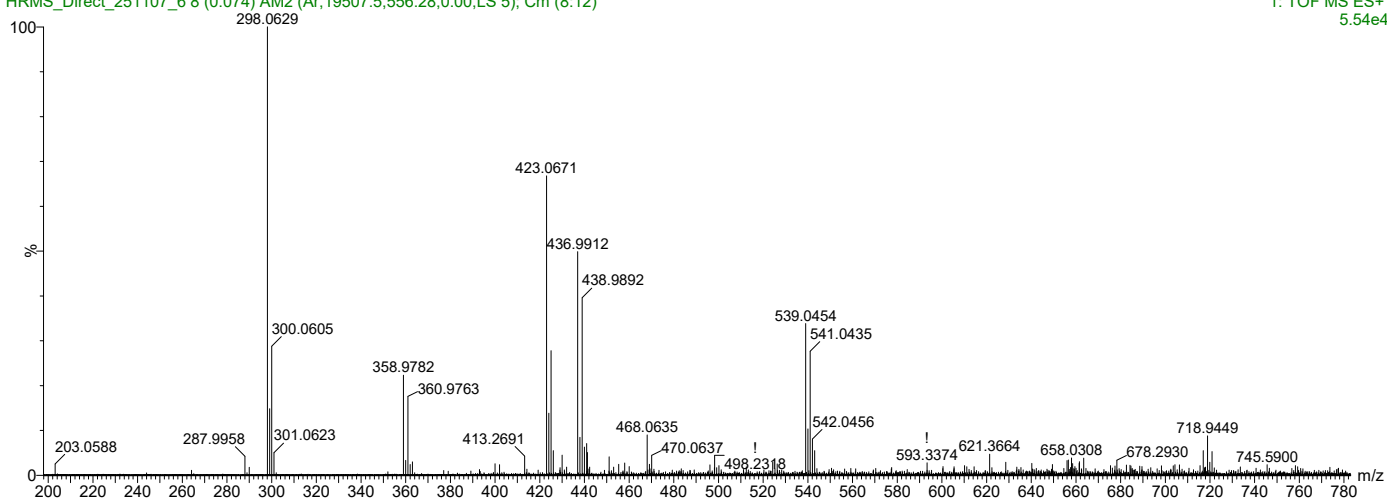


Figure S9: Mass spectrum of complex 1

Cu-HNM-P

HRMS_Direct_251107_4 8 (0.074) AM2 (Ar,19507.5,556.28,0.00,LS 5); Cm (7:11)

1: TOF MS ES+
4.87e5

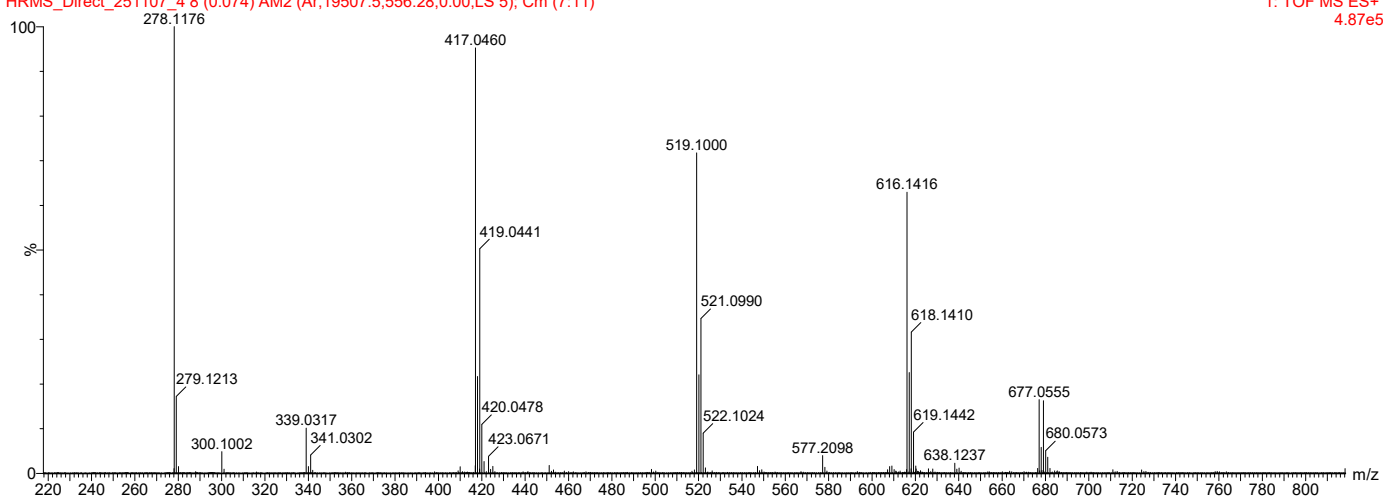


Figure S10: Mass spectrum of complex 2

Cu-HNN-P

HRMS_Direct_251107_5_9 (0.081) AM2 (Ar,19507.5,556.28,0.00,LS 5); Cm (8:11)

1: TOF MS ES+
8.86e4

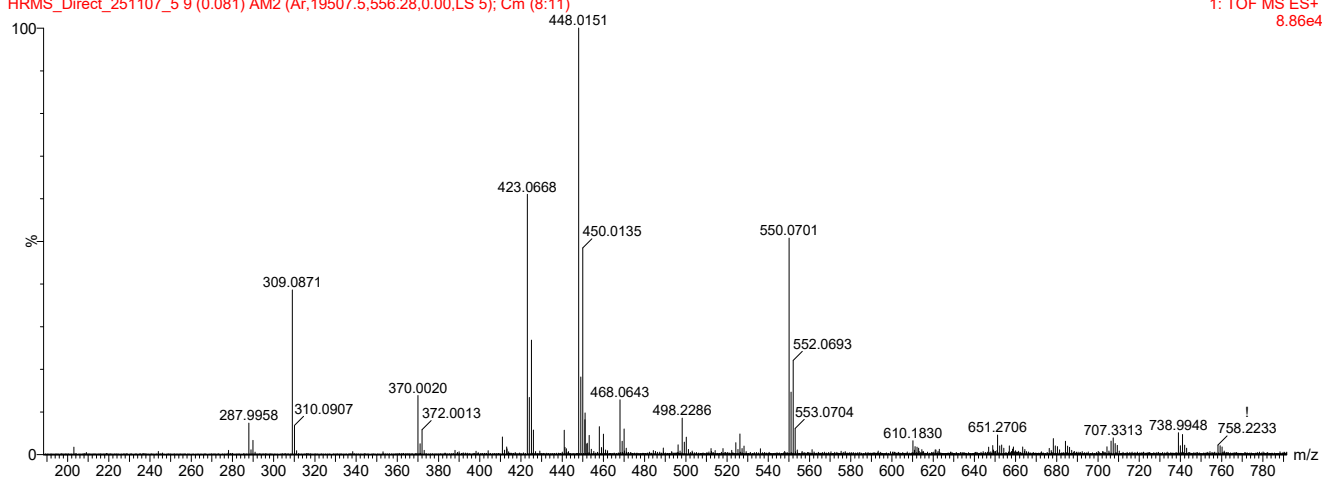


Figure S11: Mass spectrum of spectrum 3

Cu-HNC-MP

HRMS_Direct_251107_1 9 (0.081) AM2 (Ar,19507.5,556.28,0.00,LS 5); Cm (7:11)

1: TOF MS ES+
1.65e6

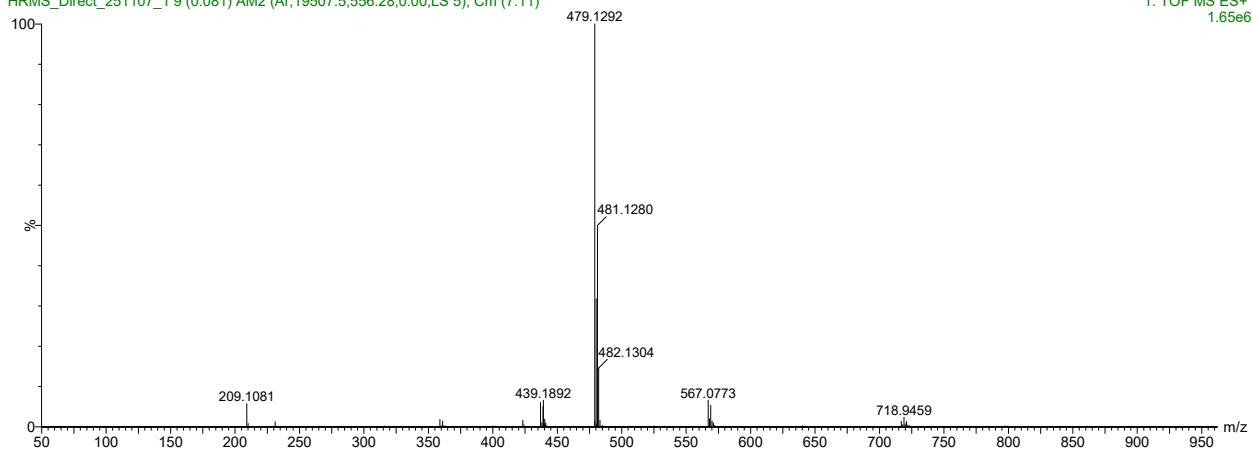


Figure S12: Mass spectrum of complex 4

Cu-HMN-MP

HRMS_Direct_251107_3 7 (0.067) AM2 (Ar,19507.5,556.28,0.00,LS 5); Cm (7:12)

1: TOF MS ES+
1.16e6

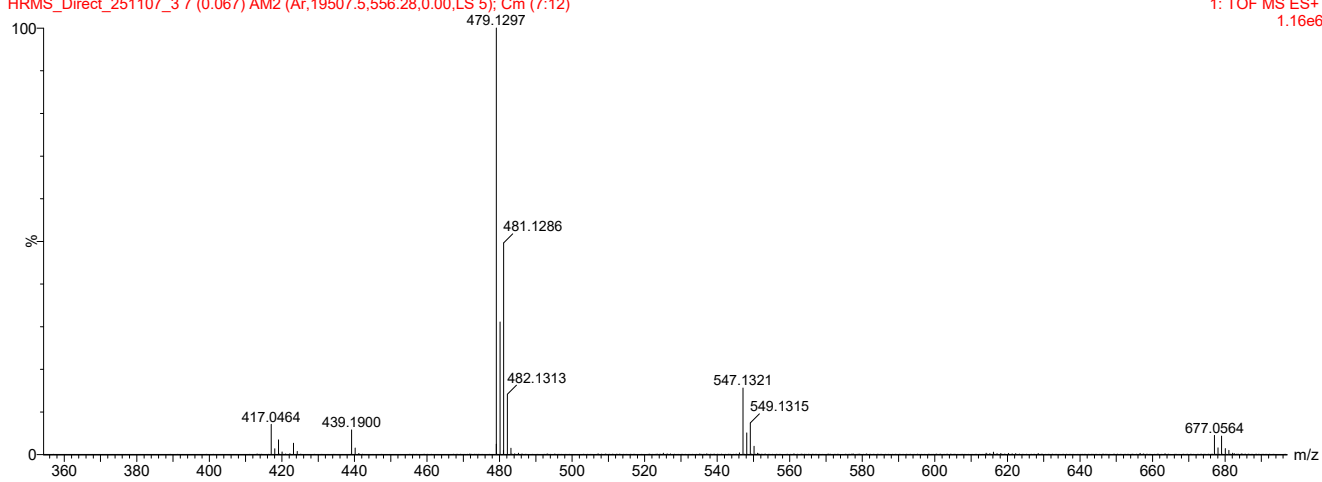


Figure S13: Mass spectrum of complex 5

Cu-HNN-MP

HRMS_Direct_251107_2_10 (0.088) AM2 (Ar,19507.5,556.28,0.00,LS 5); Cm (8:13)

1: TOF MS ES+
1.09e6

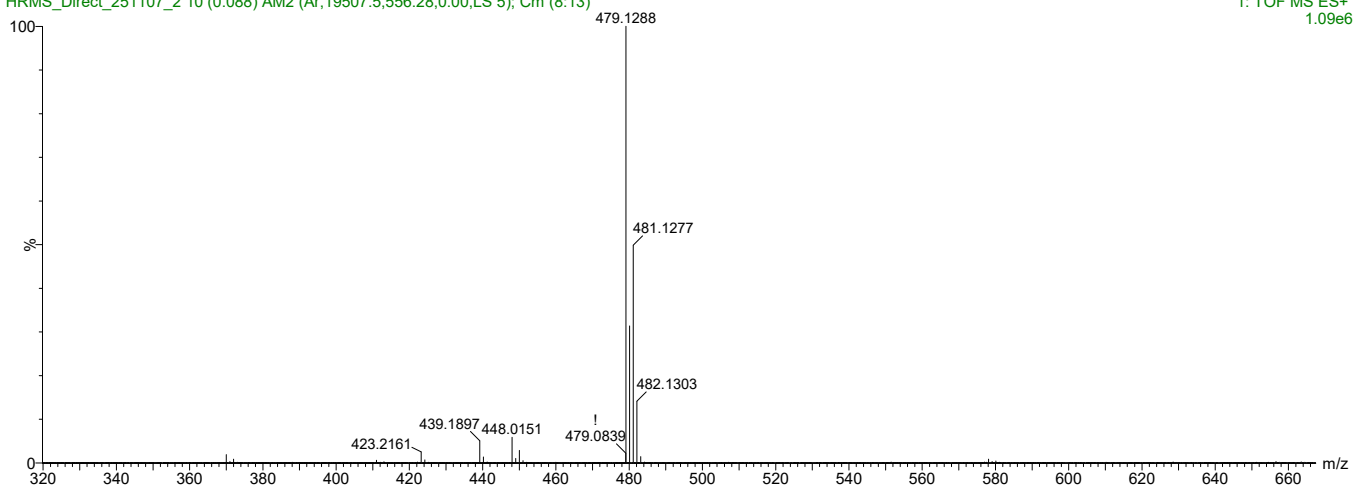


Figure S14: Mass spectrum of spectrum 6

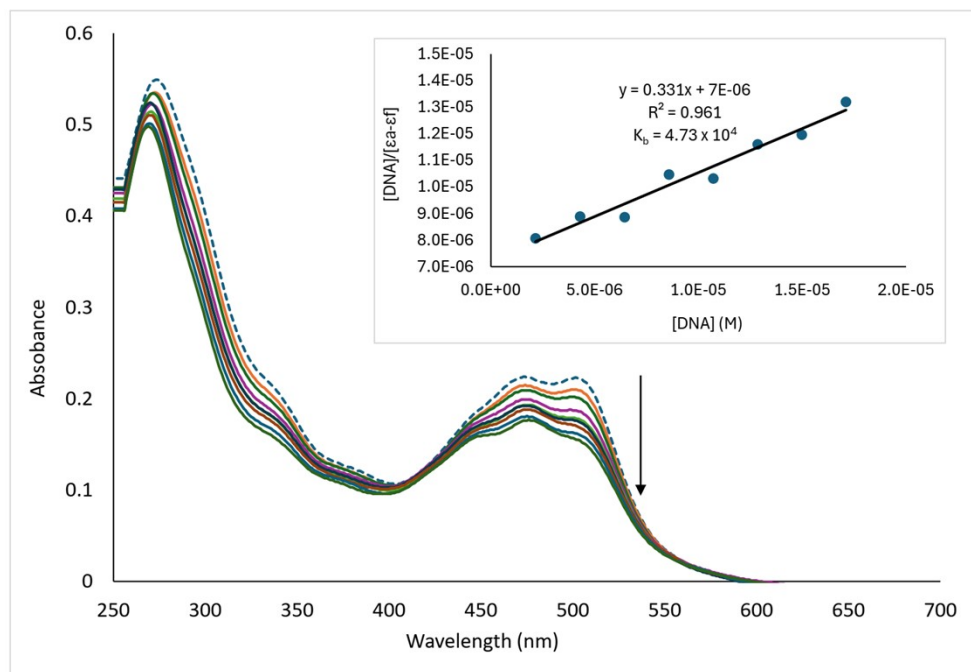


Figure S15: Electronic absorption spectrum of complex **1** in the absence (dashed line) and the presence of different concentrations of ctDNA

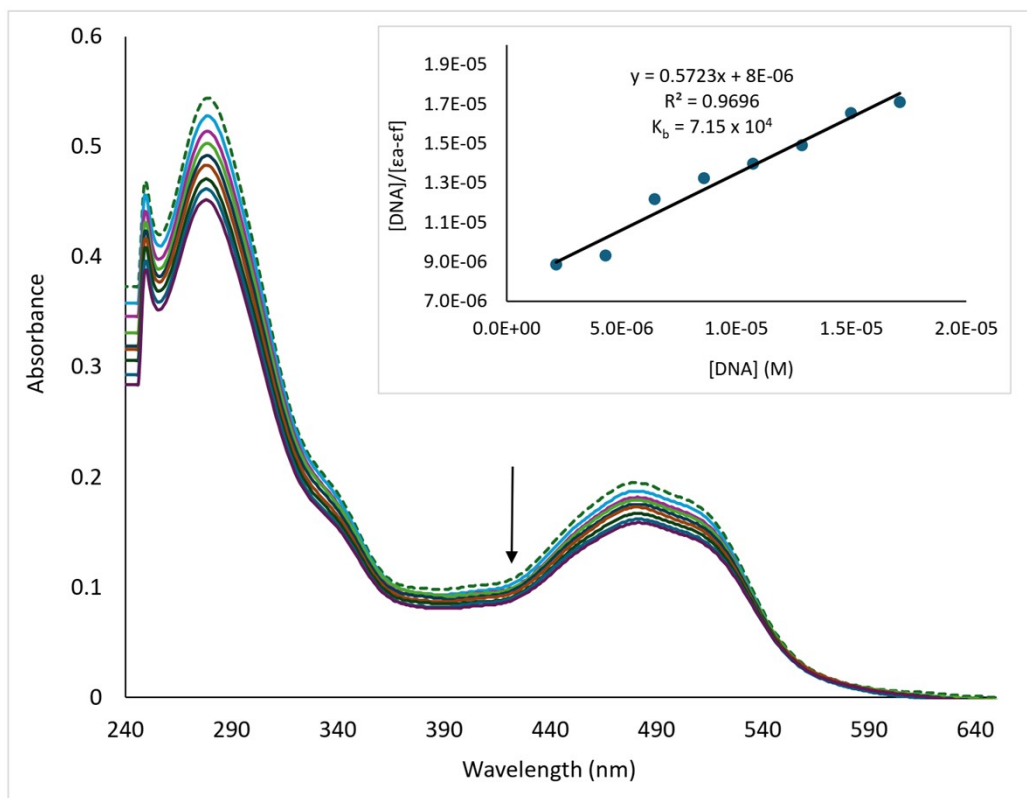


Figure S16: Electronic absorption spectrum of complex **2** in the absence (dashed line) and the presence of different concentrations of ctDNA

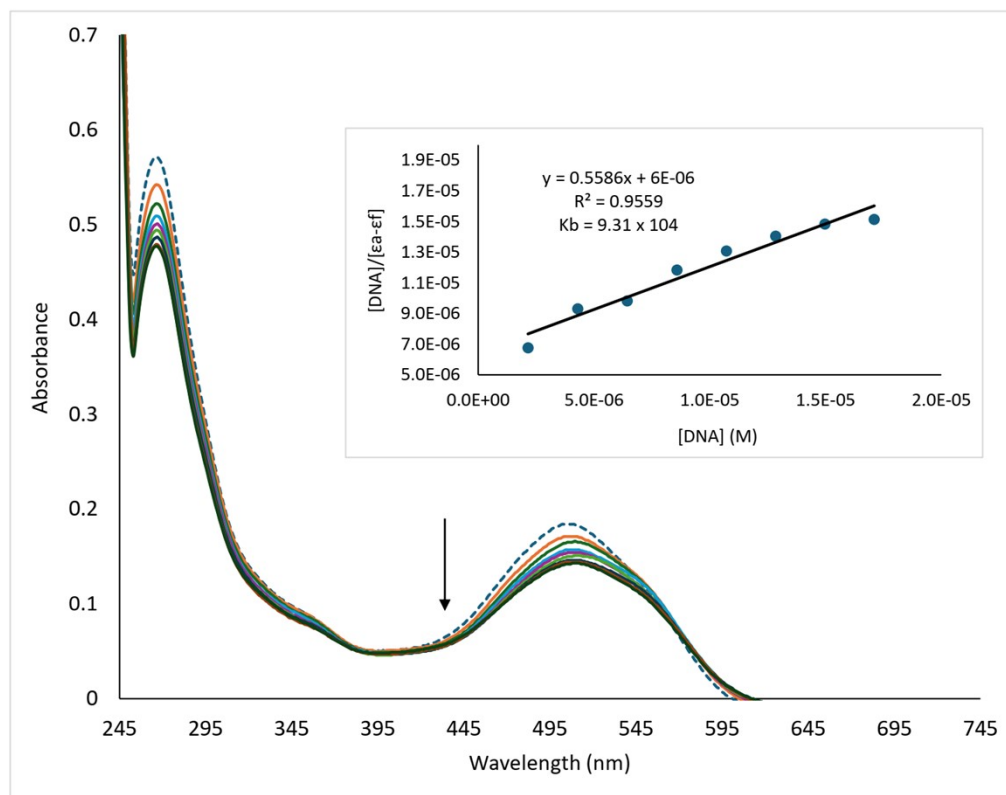


Figure S17: Electronic absorption spectrum of complex **3** in the absence (dashed line) and the presence of different concentrations of ctDNA

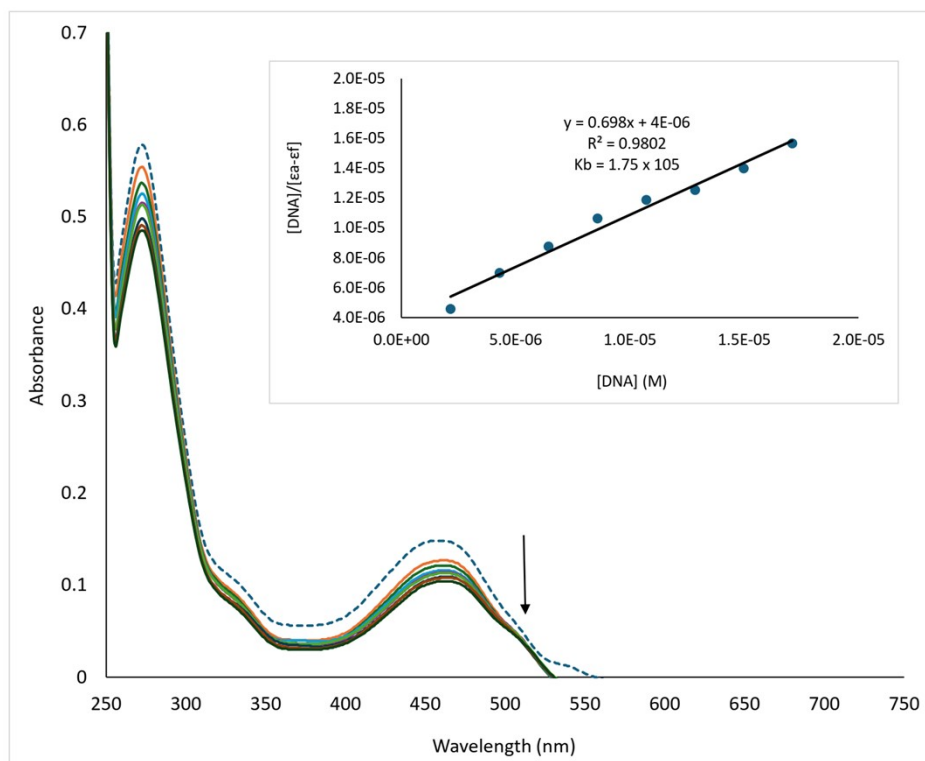


Figure S18: Electronic absorption spectrum of complex 4 in the absence (dashed line) and the presence of different concentrations of ctDNA

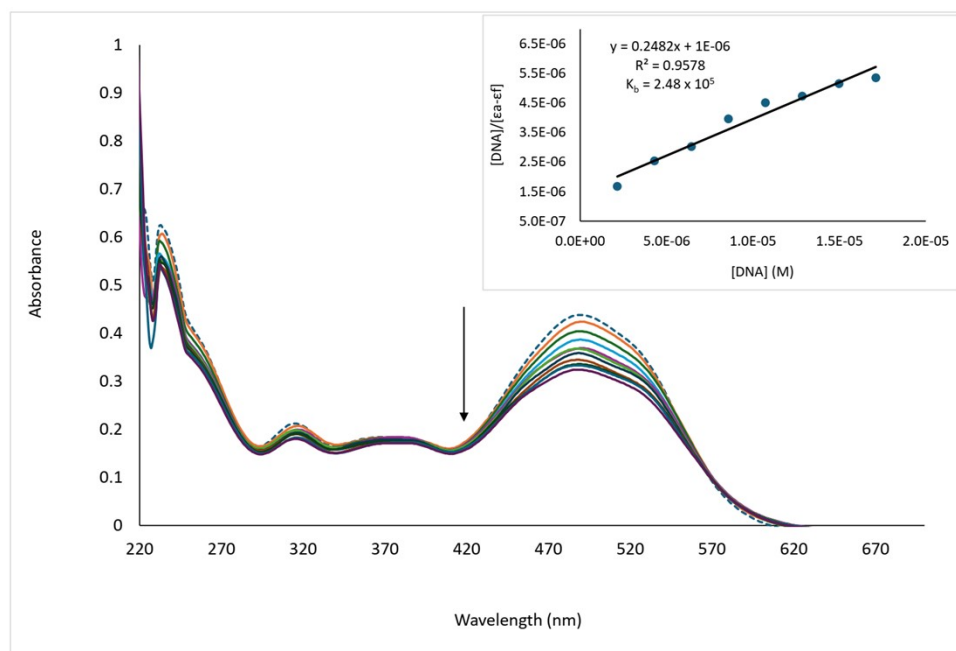


Figure S19: Electronic absorption spectrum of complex **6** in the absence (dashed line) and the presence of different concentrations of ctDNA

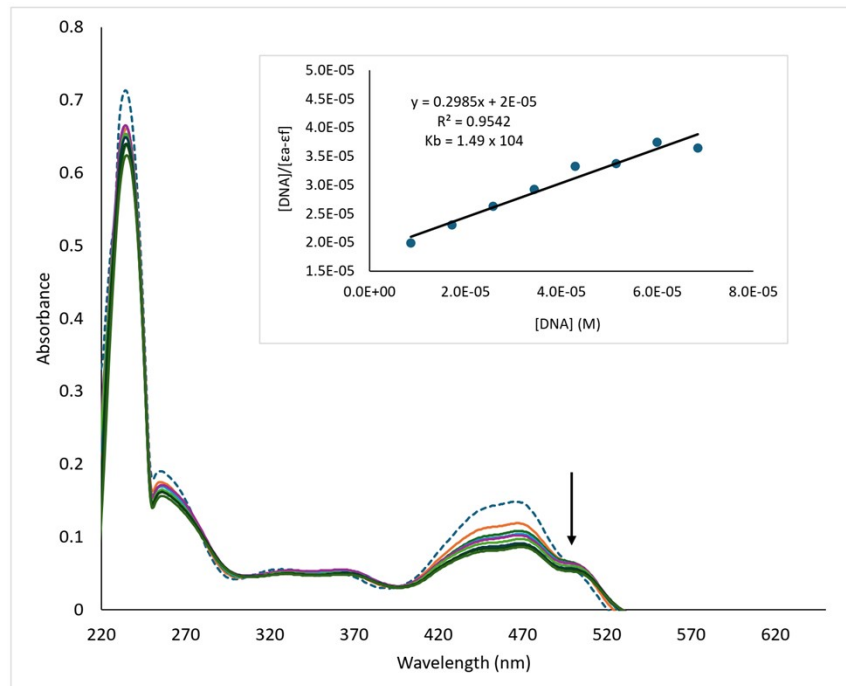


Figure S20: Electronic absorption spectrum of complex L1 in the absence (dashed line) and the presence of different concentrations of ctDNA

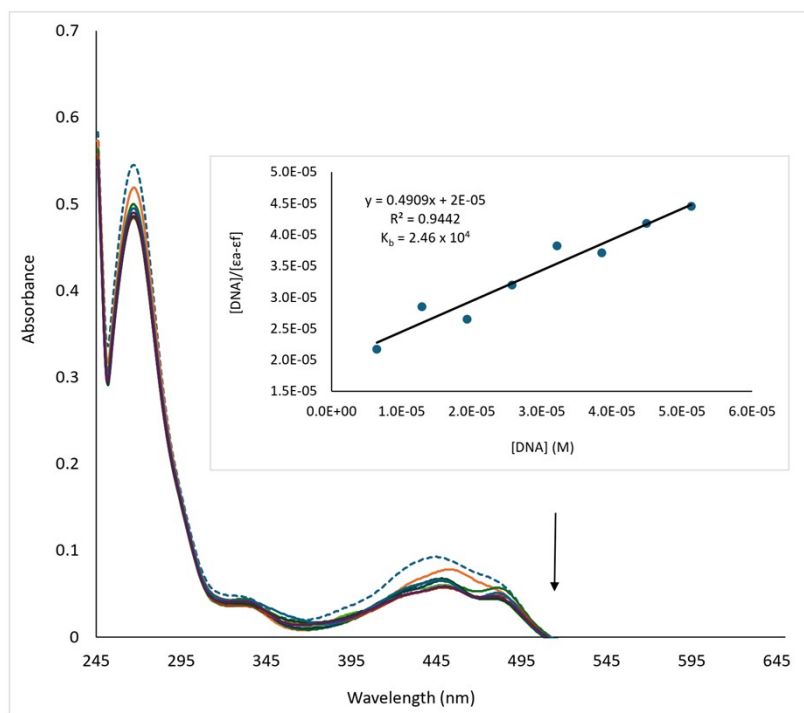


Figure S21: Electronic absorption spectrum of complex L2 in the absence (dashed line) and the presence of different concentrations of ctDNA

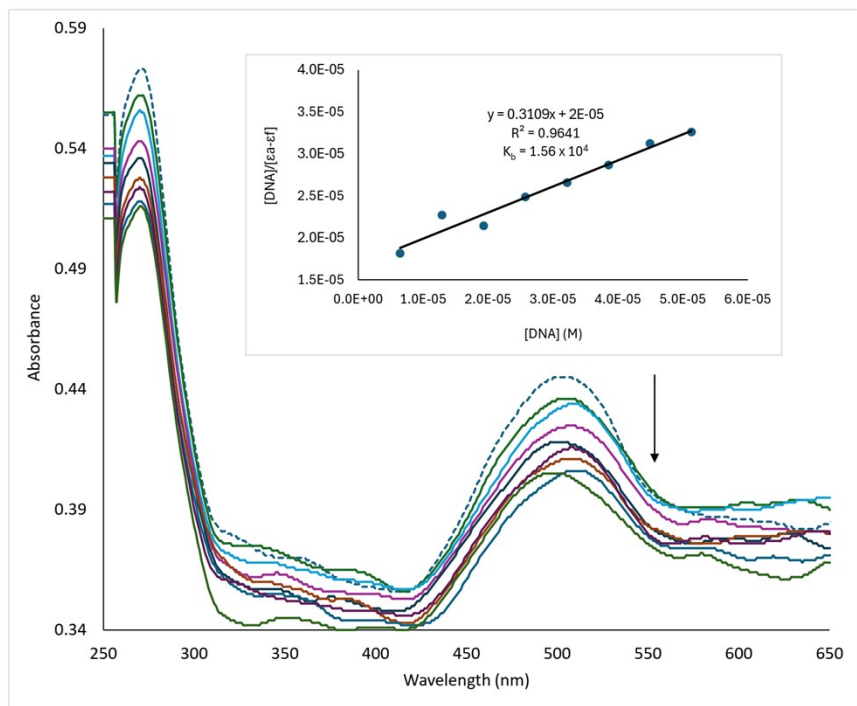


Figure S22: Electronic absorption spectrum of complex L3 in the absence (dashed line) and the presence of different concentrations of ctDNA

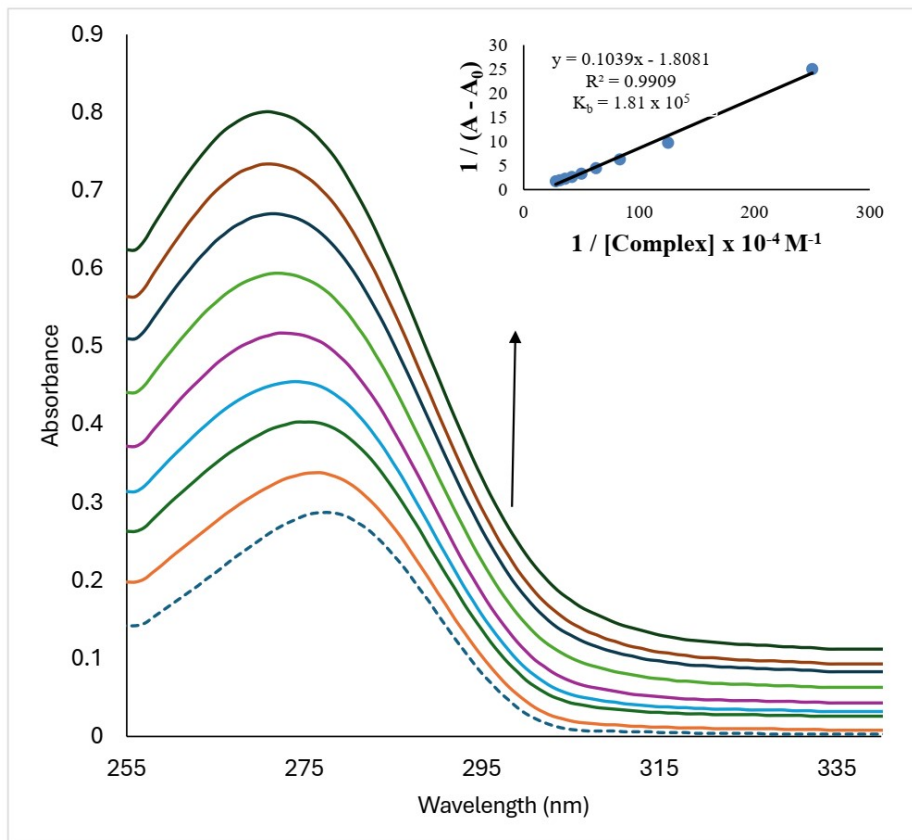


Figure S23: Electronic Absorption Spectra of BSA in the absence (dashed line) and the presence of different concentrations of complex 1.

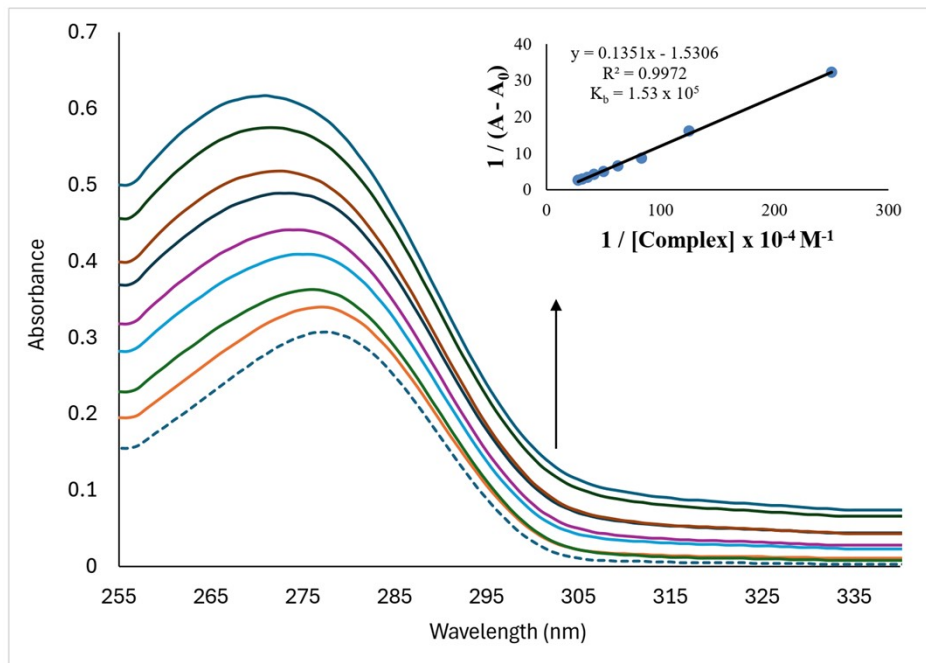


Figure S24: Electronic Absorption Spectra of BSA in the absence (dashed line) and the presence of different concentrations of complex **3**.

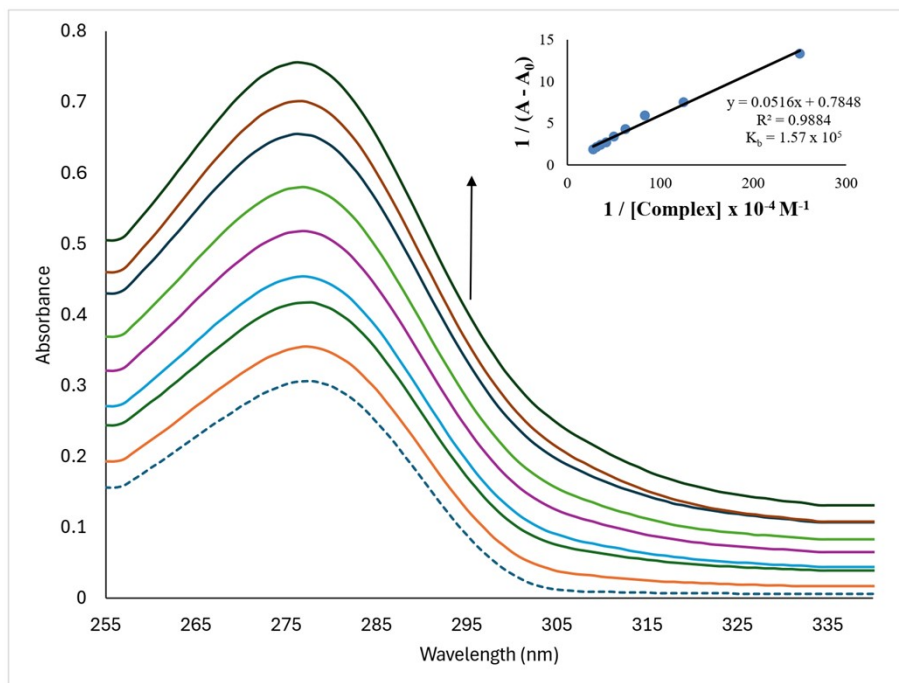


Figure S25: Electronic Absorption Spectra of BSA in the absence (dashed line) and the presence of different concentrations of complex 4.

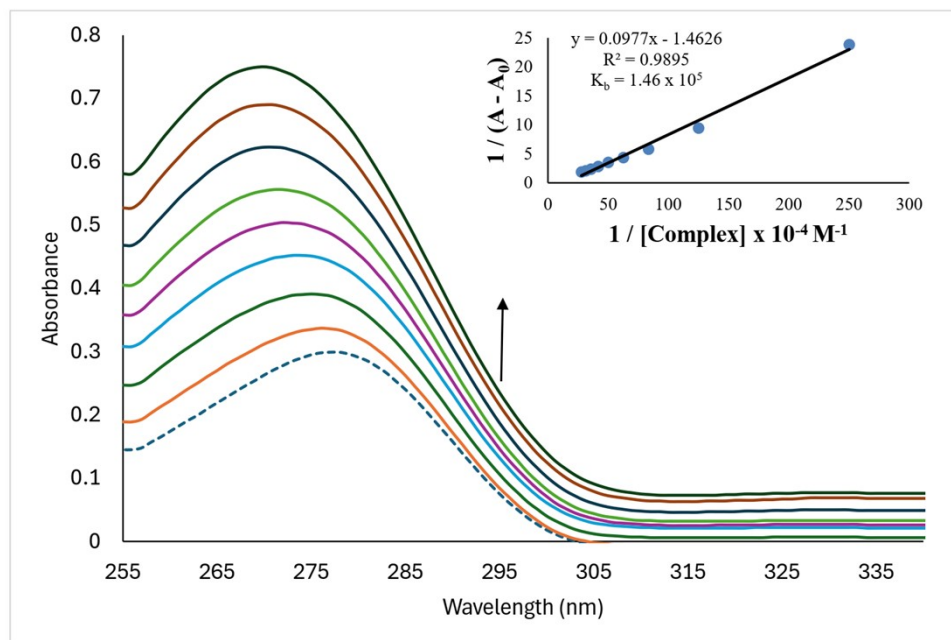


Figure S26: Electronic Absorption Spectra of BSA in the absence (dashed line) and the presence of different concentrations of complex **5**.

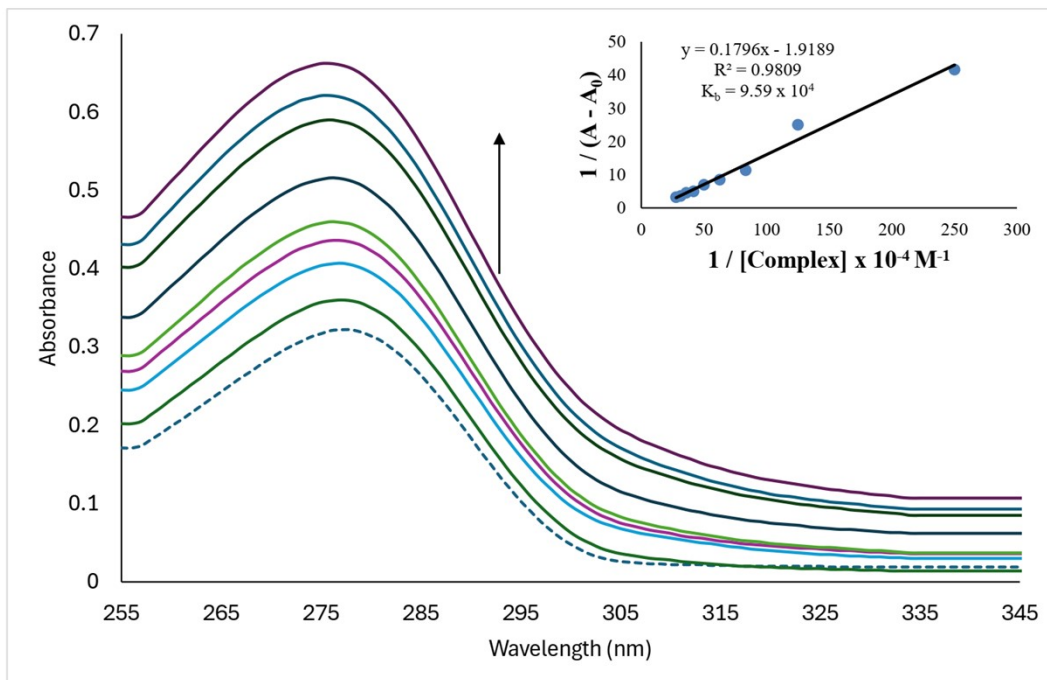


Figure S27: Electronic Absorption Spectra of BSA in the absence (dashed line) and the presence of different concentrations of complex 6.