



SUPPLEMENTARY MATERIAL TO  
**Chemical and photo-induced nuclease activity of a novel minor groove DNA binder Cu(II) complex**

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CHARACTERISATION DATA

*8-(Difluoromethoxy)-3,4-dihydro-2H-[1,3]thiazino[3,2-a]benzimidazole (dtb)*. Yield: 72 %; m.p.: 115 °C; Anal. Calcd. for C<sub>11</sub>H<sub>10</sub>F<sub>2</sub>N<sub>2</sub>OS: C, 51.55; H, 3.93; N, 10.93 %. Found: C, 51.47; H, 3.98; N, 10.91 %; FT-IR (cm<sup>-1</sup>): 2976s, 2934s, 1618s, 1500w, 1468vs, 1114vs, 966w, 870w (Fig. S-3); <sup>1</sup>H-NMR (600 MHz, CDCl<sub>3</sub>, δ / ppm): 7.37 (1H, s), 7.16 (1H, d, J = 8.2 Hz), 6.98 (1H, d, J = 8.4 Hz), 6.49 (1H, t, J = 74.5 Hz), 4.18 (2H, t, J = 6.9 Hz), 3.23 (2H, m), 2.47 (2H, t, J = 5.7 Hz) (Fig. S-2). <sup>13</sup>C-NMR (600 MHz, CDCl<sub>3</sub>, δ / ppm): 149 (C–S), 147 (C–O), 143 (C), 133 (C), 116 (CH), 114 (CH), 109 (CH), 108 (CH), 42 (CH<sub>2</sub>), 25 (CH<sub>2</sub>), 23 (CH<sub>2</sub>) (Fig. S-3); GC-MS (*m/z*): 256.12 [M+H] (Fig. S-1).

*(8-(Difluoromethoxy)-3,4-dihydro-2H-[1,3]thiazino[3,2-a]benzimidazole) (1,10-phenanthroline)copper(II) nitrate complex, [Cu(dtb)(phen)](NO<sub>3</sub>)<sub>2</sub>*. Yield: 62 %; Anal. Calcd. for C<sub>23</sub>H<sub>18</sub>CuF<sub>2</sub>N<sub>3</sub>O<sup>+</sup>: C, 55.25; H, 3.63; N, 11.20 %. Found: C, 55.16; H, 3.55; N, 11.09 %. FT-IR (cm<sup>-1</sup>): 3049w, 2985w, 1630w, 1581vs, 1517s, 1475vs, 1424vs, 1275vs, 1224s, 1013vs, 964w, 843vs, 720vs (Fig. S-5). ESI-MS (*m/z*): 500.8 [M+H] (Fig. S-4).

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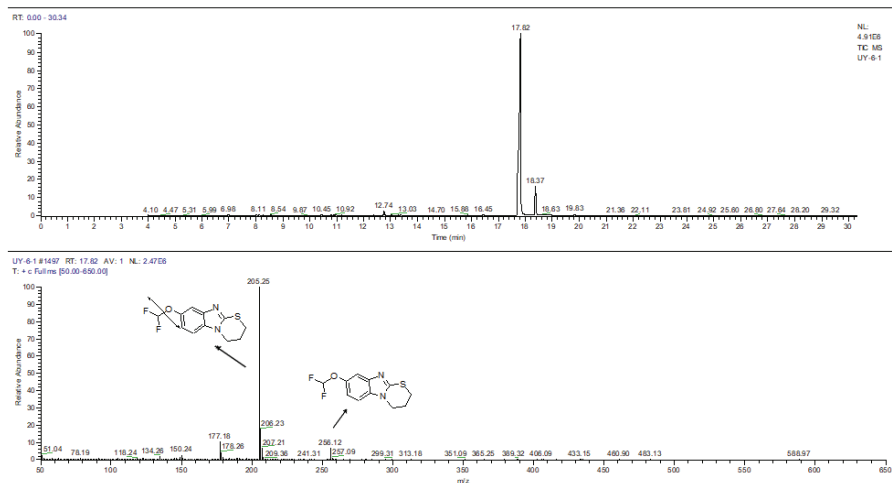
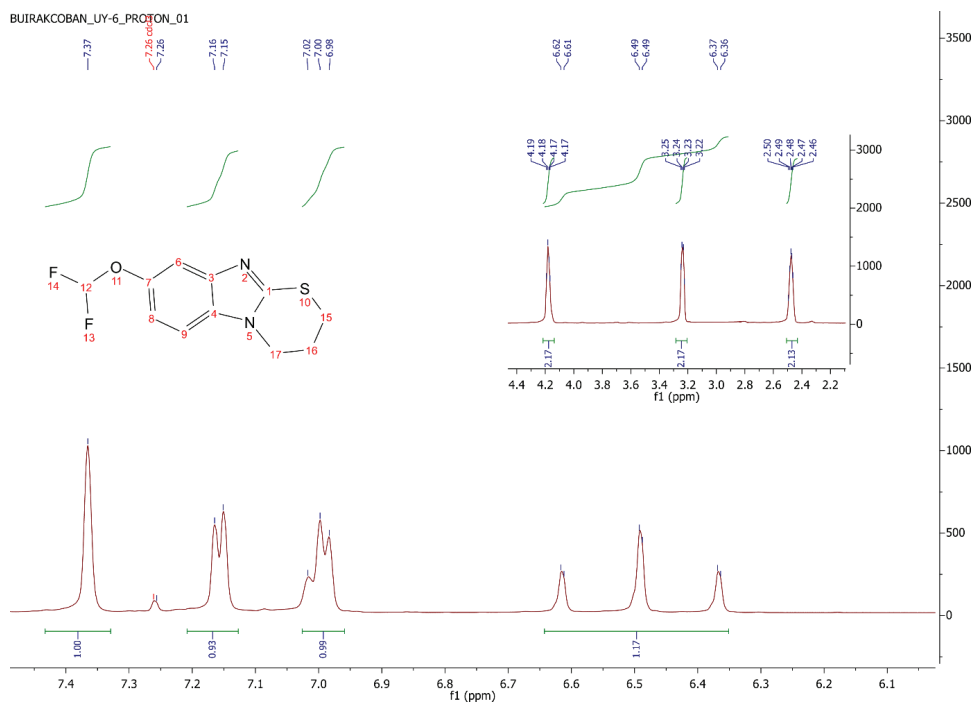


Fig. S-1. GC-MS spectrum for dtb.

Fig. S-2.  $^1\text{H-NMR}$  spectrum for dtb.

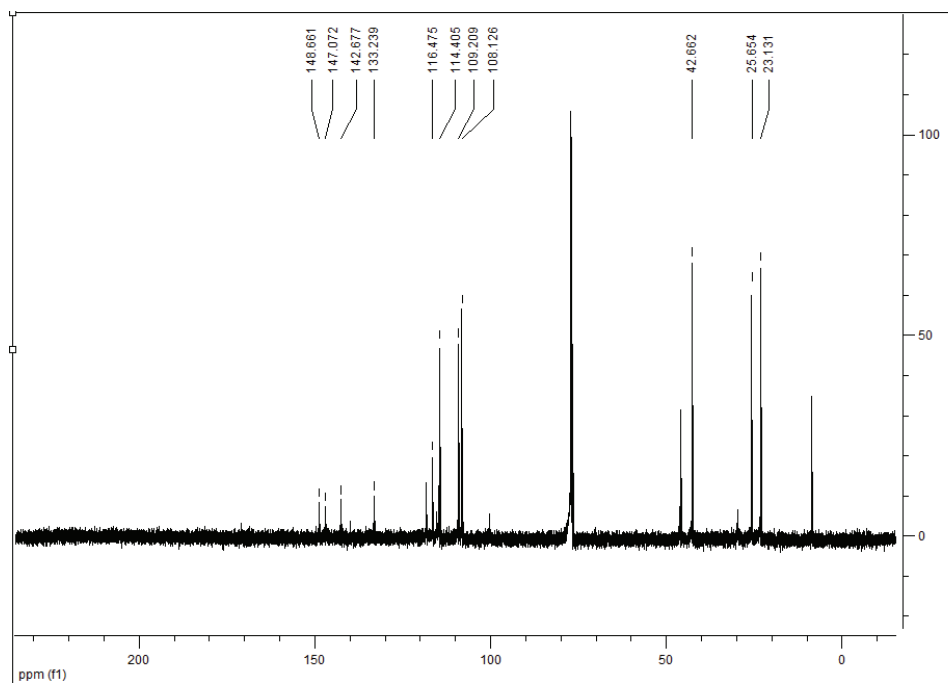


Fig. S-3.  $^{13}\text{C}$ -NMR spectrum for dtb.

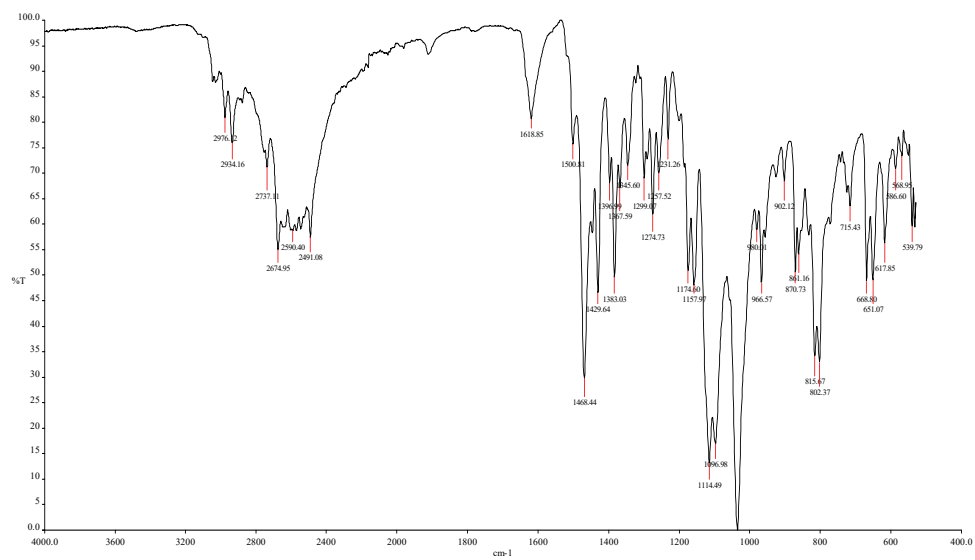
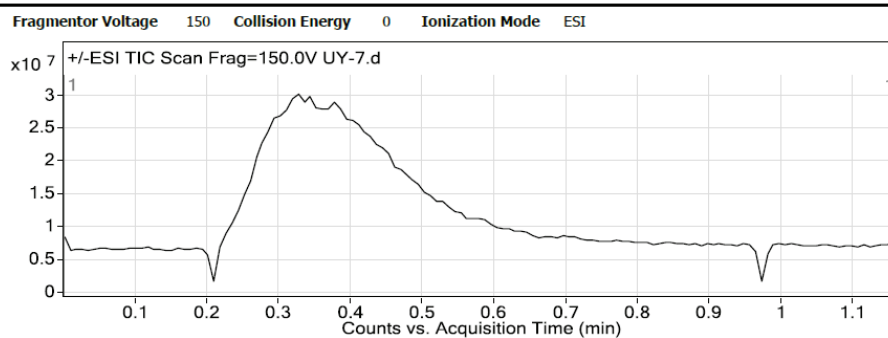
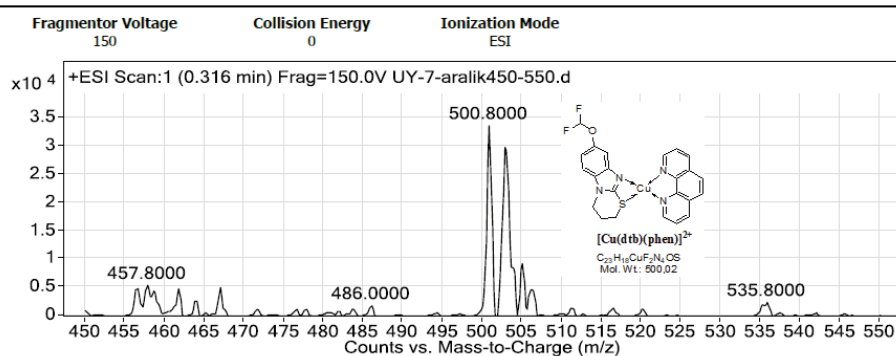
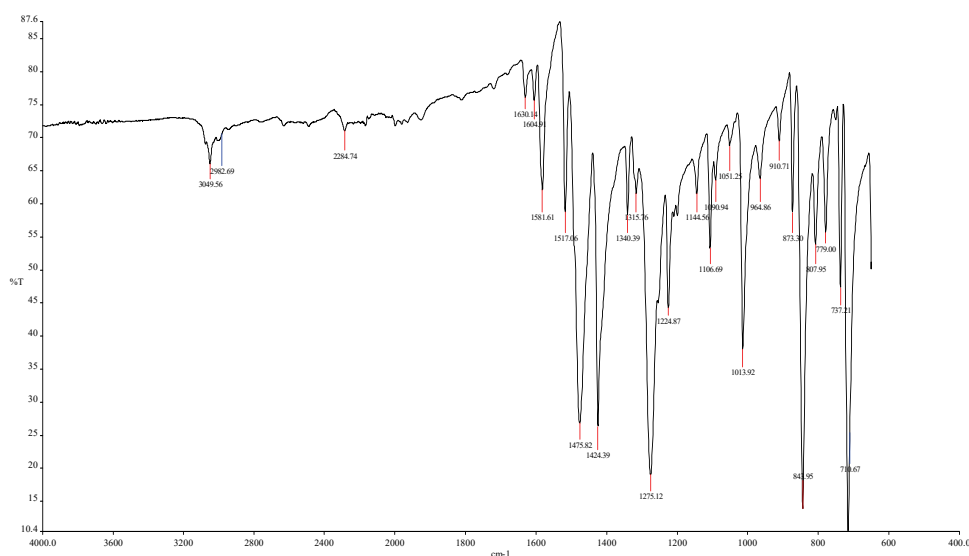


Fig. S-4. FT-IR spectrum for dtb.

## User Chromatograms



## User Spectra

Fig. S-5. ESI-MS spectrum for [Cu(dtb)(phen)]<sup>2+</sup>.Fig. S-6. FT-IR spectrum for [Cu(dtb)(phen)]<sup>2+</sup>.