SUPPLEMENTARY MATERIAL TO

**Spectral, NLO and antimicrobial studies of Co(II), Ni(II) and Cu(II) complexes of Schiff base ligands of 2-amino-6-nitrobenzothiazole**

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CHARACTERISATION DATA FOR **L1**-**L4** AND THEIR METAL(II) COMPLEXES

*N****-(****4-methylbenzylidene)-6-nitrobenzothiozol-2-amine**(****L1****)*.Anal. Calcd. for C15H11N3S: C, 60.59; H, 3.73; N, 14.13; S, 10.78 %. Found: C, 59.19; H, 3.03; N, 13.05; S, 9.68 %. 1H-NMR (300 MHz, DMSO-d6, δ/ppm): 8.35 (s, 1H), 7.46-6.93 (m, 7H), 1.63 ppm (s, 3H). 13C NMR (75MHz, DMSO-d6, δ/ppm): 22.3 (-**C**H3), 163 (-N=CH-), 129-142.3 (-**C6**H5), 175 (-S-**C**=N-), 145-155 (-**C6**H5, –S-C=N). ESI-MS (*m*/z, (relative abundance, %)): 296.5 [M+] (20), 281 (13), 250 (85), 206 (100), C15H11N3O2S, (Calcd, 297.06).

*N****-(****4-ethylbenzylidene)-6-nitrobenzothiozol-2-amine**(****L2****)*.Anal. Calcd. for C15H11N3S: C, 60.59; H, 3.73; N, 14.13. S, 10.78 %; Found: C, 59.19; H, 3.03; N, 13.05, S, 9.68 %. 1H-NMR (300 MHz, DMSO-d6, δ/ppm): 8.41 (s, 1H), 7.40-6.94 (m, 7H), 1.89 (q, 2H), 1.63 (t, 3H). 13C NMR (75MHz, DMSO-d6, δ/ppm): 14.3(-CH3), 28 (-**C**H2CH3)  160 (-N=**C**H-), 129.1-146.6 (-**C6**H5), 174.3 (-S-**C**=N-), 147-154 (-**C6**H5 –S-C=N); ESI-MS (*m*/z, (relative abundance, %)): 310.5 [M+] (20), 281 (14), 249 (83), 206 (100), C16H13N3 S, (Calcd, 311.36).

*N-(4-hytroxybenzylidene)-6-nitro benzothiazole-2-amine (****L3****)*: Anal. Calcd. for C14H9N3 S: C, 56.18; H, 3.05; N, 14.04; S, 10.71 %. Found: C, 55.22; H, 2.25; N, 13.26 S, 9.30 %; 1H-NMR (300 MHz, DMSO-d6, δ/ppm): 8.45 (s, 1H), 7.26-6.95 (m, 7H), 11.23 (s, 1H). 13C NMR (75MHz, DMSO-d6,, δ/ppm): 160 (-N=**C**H-), 135.1-150.6 (-**C6**H5 ), 174.6 (-S-**C**=N-), 154-157.8 (-**C6**H5 –S-C=N); ESI-MS (*m*/z, (relative abundance, %)): 298.90 [M+] (16), 281 (24), 168(72), 205 (100), C14H9N3 S, (Calcd, 299.36).

*N-(2-hytroxybenzylidene)-6-nitro benzothiazole-2-amine (****L4****)*: Anal. Calcd. for C14H9N3 S: C, 56.18; H, 3.05; N,14.04; S,10.71 %. Found: C, 55.22; H, 2.25; N, 13.26 S, 9.30 %; 1H-NMR (300 MHz, DMSO-d6, δ/ppm): 8.40 (s,1H), 7.36-6.94 ( m, 7H), 11.34 ppm (s, 1H). 13C NMR (75MHz, DMSO-d6, δ/ppm); **L4** : δ = 160.5 (-N=**C**H-), 138 – 151.6 (-**C6**H5 ), 175.5 (-S-**C**=N-), 150.3 – 158.0 (-**C6**H5 –S-C=N). ESI-MS (*m*/z, (relative abundance, %)): 298.90 [M+] (16), 281 (24), 168 (72), 205 (100), C14H9N3 S, (Calcd, 299.36).

***L1-Co***. Anal. Calcd. for C30H22Cl2CoN6S2: C, 49.73; H, 3.06; N,11.60; S, 8.85 %. Found: C, 48.20; H, 2.78; N, 10.33; S, 7.80.

***L1-Ni***. Anal. Calcd. for C30H22Cl2NiN6S2: C, 49.75; H, 3.06; N, 11.60; S, 8.85 %. Found: C, 48.10; H, 2.88; N, 10.43; S, 7.85;

***L1-Cu***. Anal. Calcd. for C30H22Cl2CuN6S2: C, 49.42; H, 3.04; N, 11.53; S, 8.80 %. Found C, 48.12; H, 2.84; N,10.33; S,7.85.

***L2-Co***. Anal. Calcd. for C32H26Cl2CoN6S2: C, 51.07; H, 3.48; N, 11.17; S, 8.52. Found: C, 50.70; H, 2.95; N, 10.05; S, 7.25.

***L2-Ni****.* Anal. Calcd. for C32H26Cl2Ni N6S2: C, 51.09; H, 3.48; N, 11.17; S, 8.51 %. Found: C, 50.70; H, 2.95; N, 10.00; S,7.35.

***L2-Cu***. Anal. Calcd. for C32H26Cl2CuN6S2: C, 50.76; H, 3.46; N, 11.10; S, 8.45 %. Found: C, 49.85; H, 2.75; N, 10.15; S, 7.65.

***L3-Co***. Anal. Calcd. for C28H18Cl2CoN6S2: C, 46.17; H, 2.49; N, 11.54; S, 8.80 %. Found: C, 45.20; H, 1.55; N, 10.50; S, 7.85.

***L3-Ni***. Anal. Calcd. for C28H18Cl2NiN6S2: C, 46.18; H, 2.49; N, 11.54; S, 8.81 %. Found: C, 45.25; H, 1.50; N, 10.50; S, 7.75.

***L3-Cu***. Anal. Calcd. for C28H18Cl2CuN6S2: C, 45.88; H, 2.47; N, 11.46; S, 8.75 %. Found C,45.00; H, 2.05; N,10.35; S,7.65.

***L4-Co***. Anal. Calcd. for C28H16CoN6S2: C, 51.30; H, 2.46; N, 12.82; S, 9.78 %. Found: C, 50.70; H, 1.75; N, 11.75; S, 8.85 %.

***L4-Ni****.*Anal. Calcd. for C28H16NiN6S2: C, 51.32; H, 2.46; N,12.82; S, 9.79 %. Found C, 50.65; H, 1.80; N,11.78; S,8.80.

***L4-Cu***. Anal. Calcd. for C28H16CuN6S2: C, 50.94; H, 2.44; N, 12.73; S, 9.71 %. Found C, 50.15; H, 1.92; N, 11.95; S, 8.70 %.