Supporting information

Synthesis of porphyrin sensitizers with thiazole group as an efficient π-spacer: Potential application of Dye Sensitized Solar Cells

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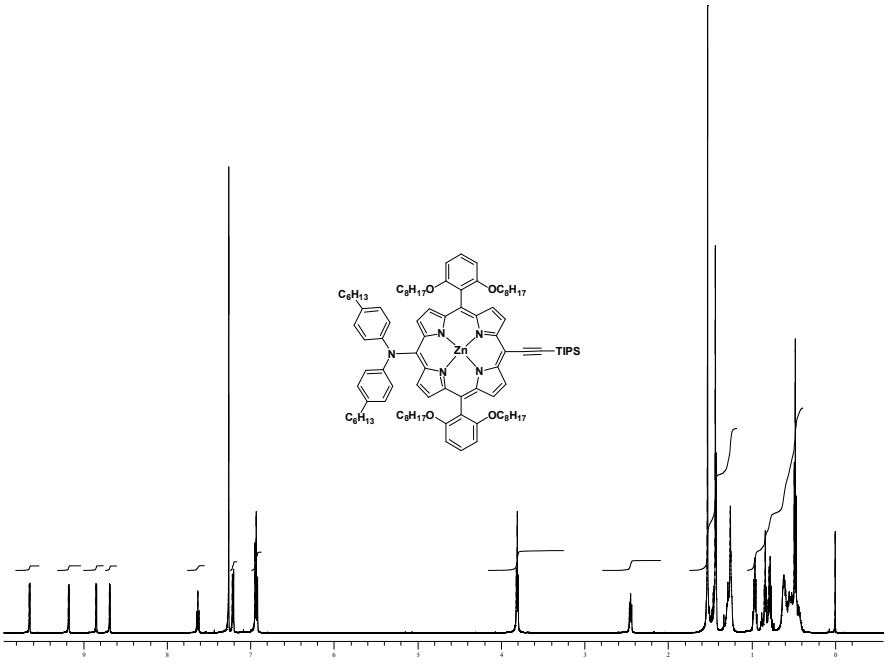


FIG: 1 ^{1}H NMR of Compound **4** in $CDCl_3$

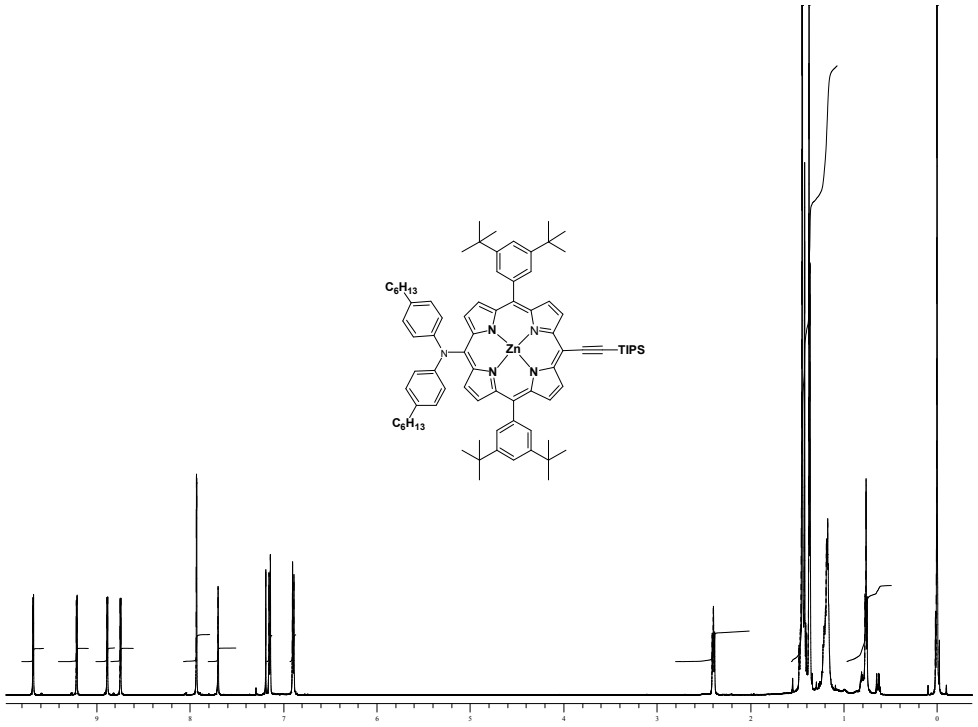


FIG: 2 ^{1}H NMR of Compound **5** in $CDCl_3$

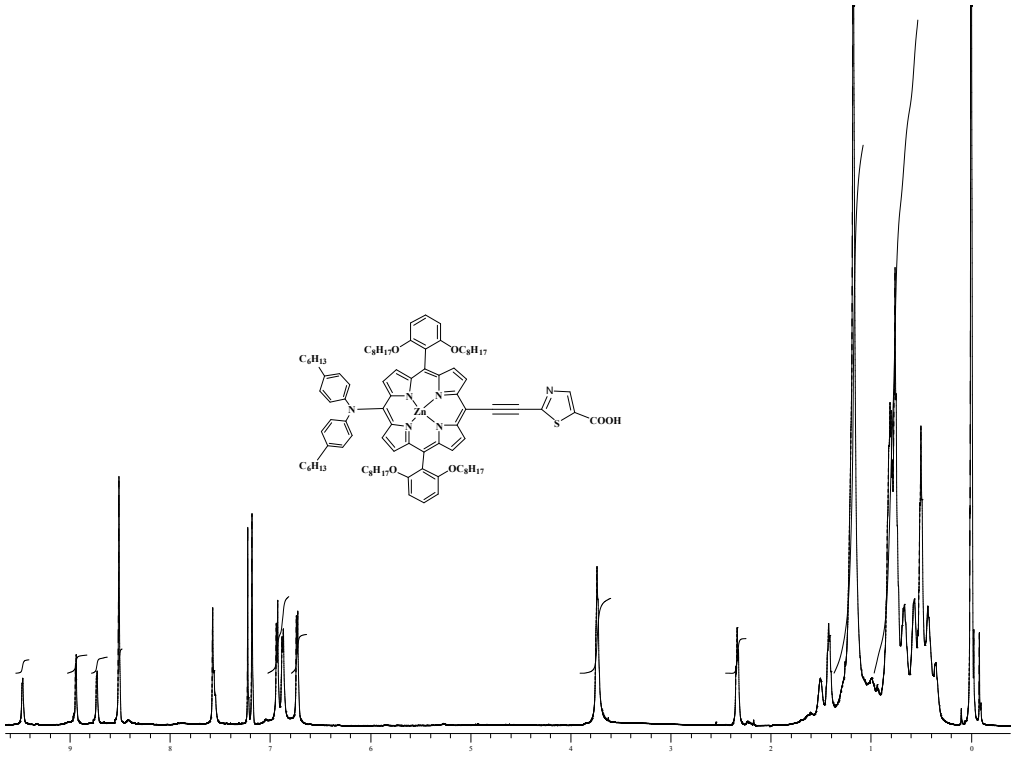


FIG: 3 ^{1}H NMR of Compound **1** in $CDCl_3$+1 drop Pyridine-d_5

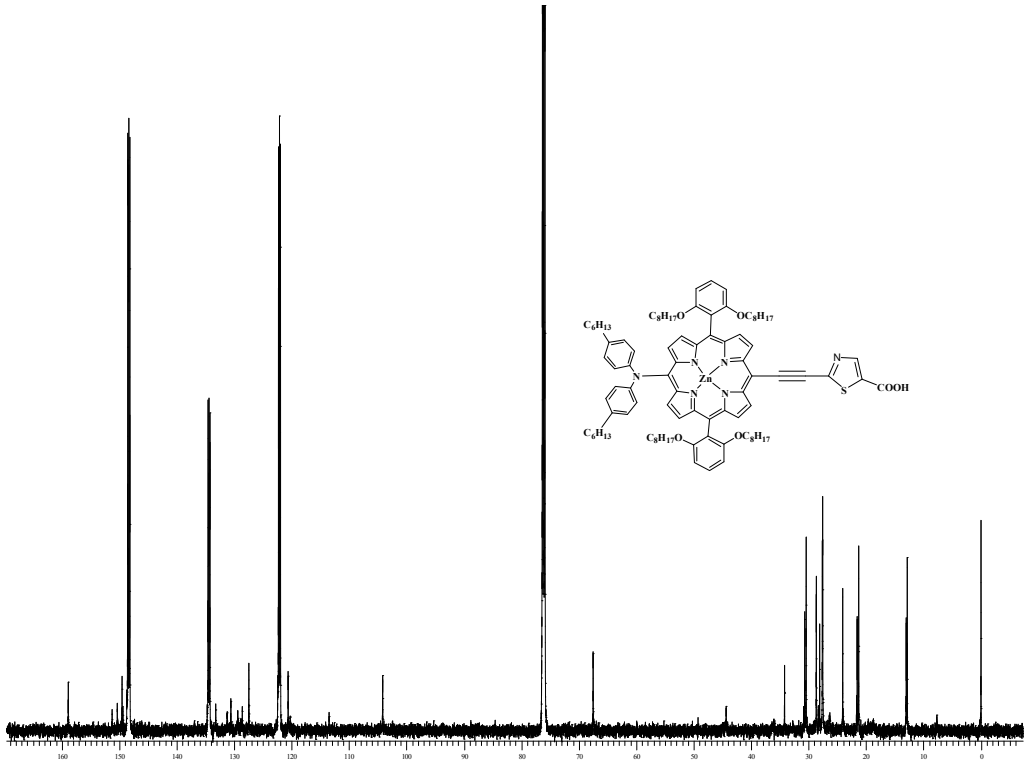
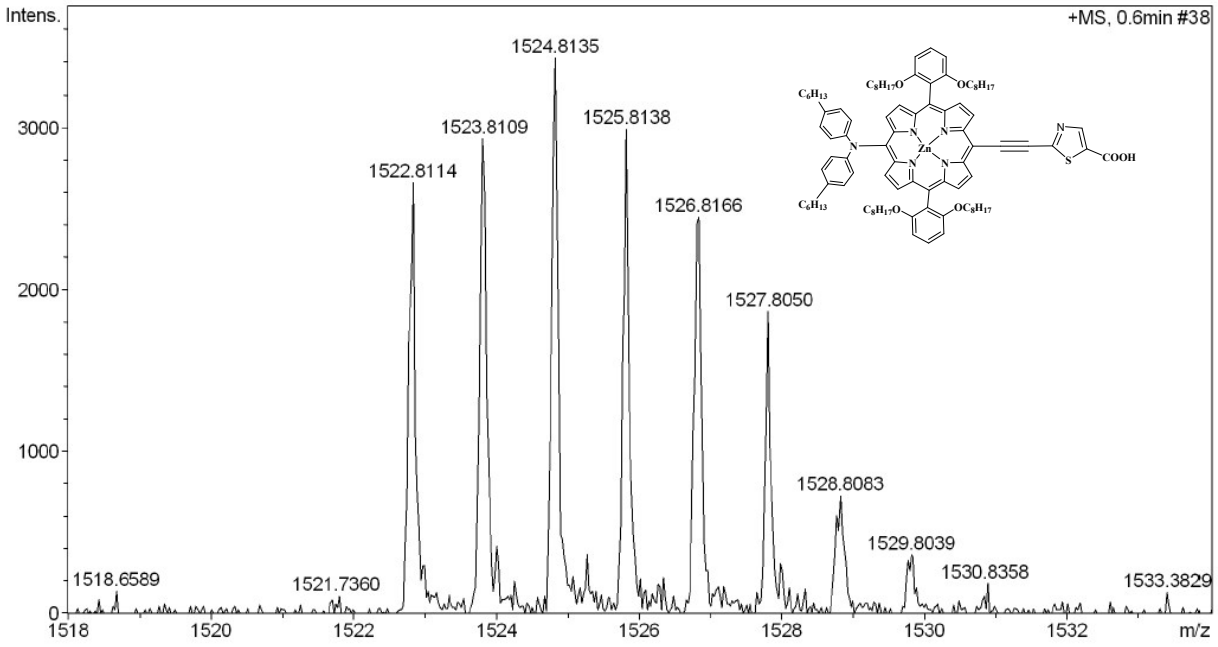
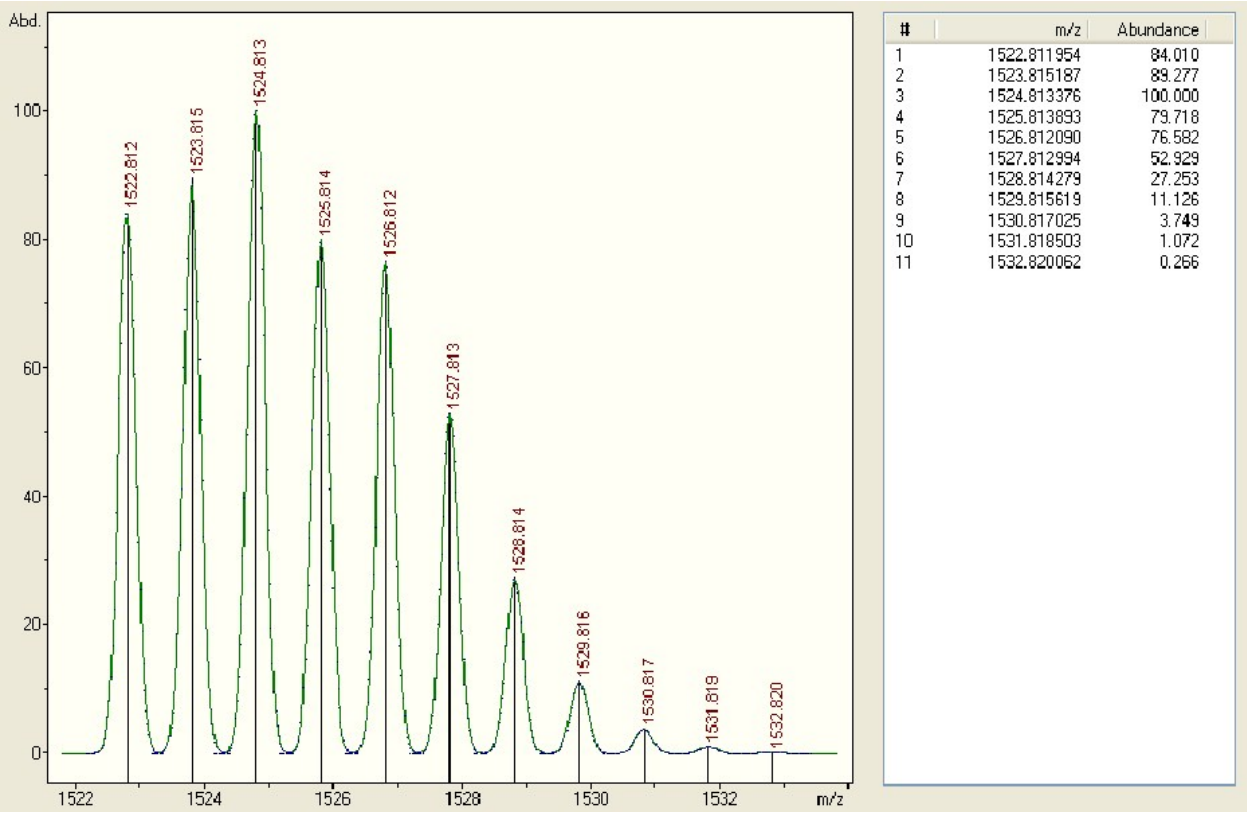


FIG: 4 ^{13}C NMR of Compound **1** in CDCl3+1 drop Pyridine-d_5





#	m/z	Abundance
1	1522.811954	84.010
2	1523.815187	89.277
3	1524.813376	100.000
4	1525.813893	79.718
5	1526.812090	76.582
6	1527.812994	52.929
7	1528.814279	27.253
8	1529.815619	11.126
9	1530.817025	3.749
10	1531.818503	1.072
11	1532.820062	0.266

FIG: 5 Observed (top) and simulated (bottom) high-resolution ESI-MS of Compound **1 (CNUOC8)**

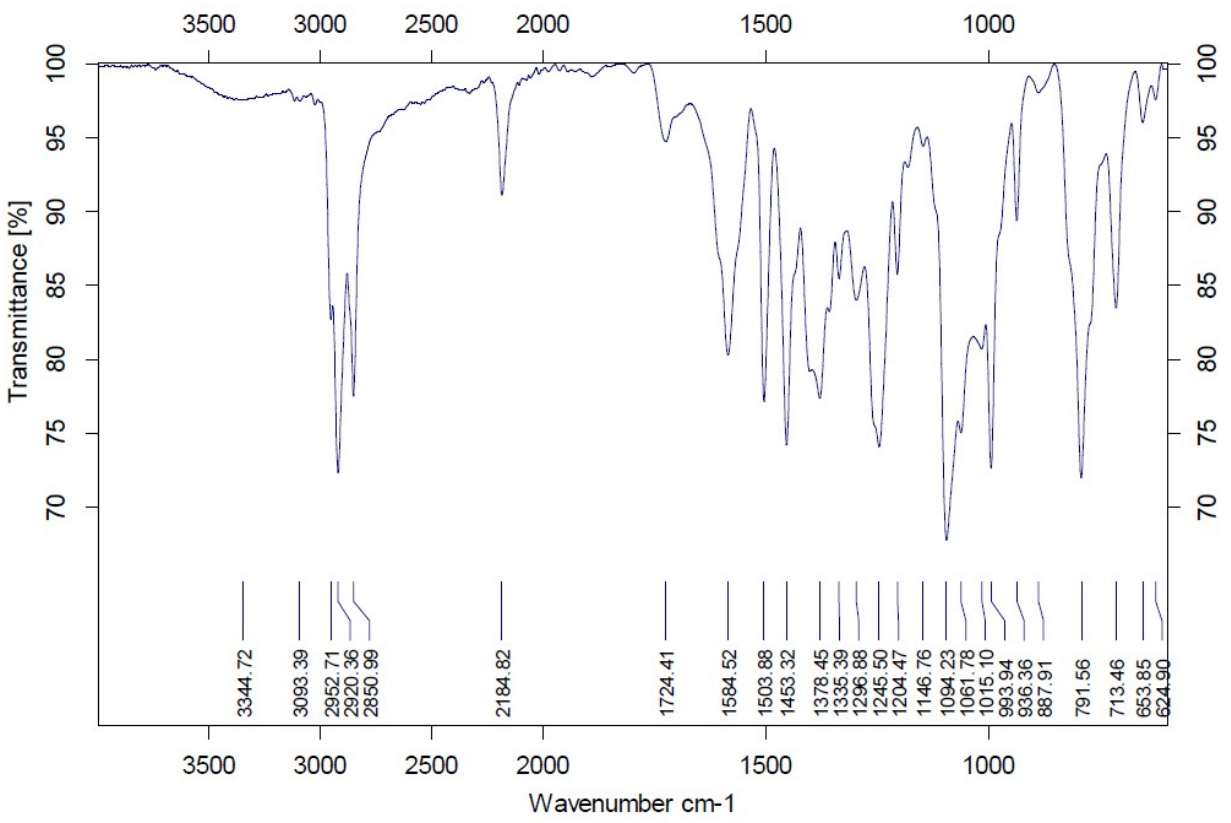


FIG: 6 FT-IR SPECTRUM OF Compound **1 (CNUOC8)**

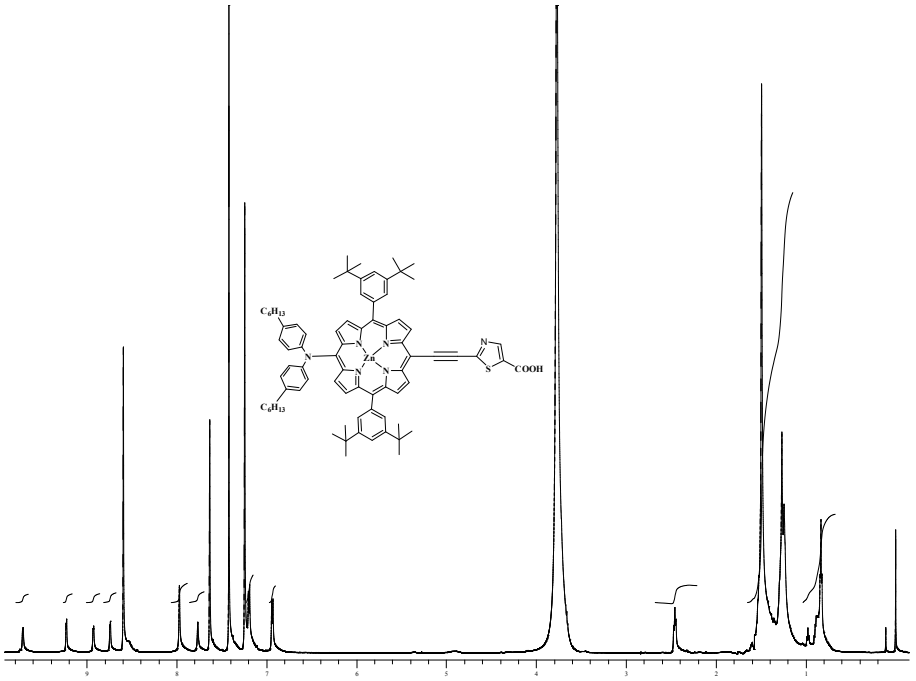


FIG: 7 ^{1}H NMR of Compound **2** in $CDCl_3$+1 drop Pyridine-d_5

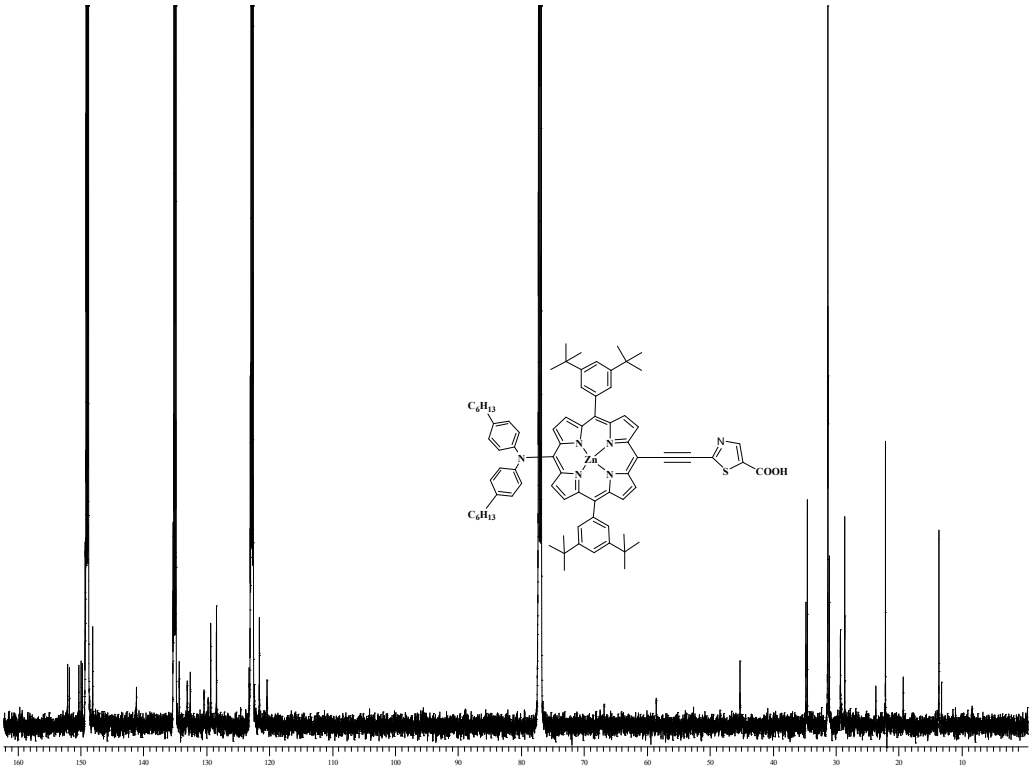


FIG: 8 ^{13}C NMR of Compound **2** in CDCl3+1 drop Pyridine-d_5

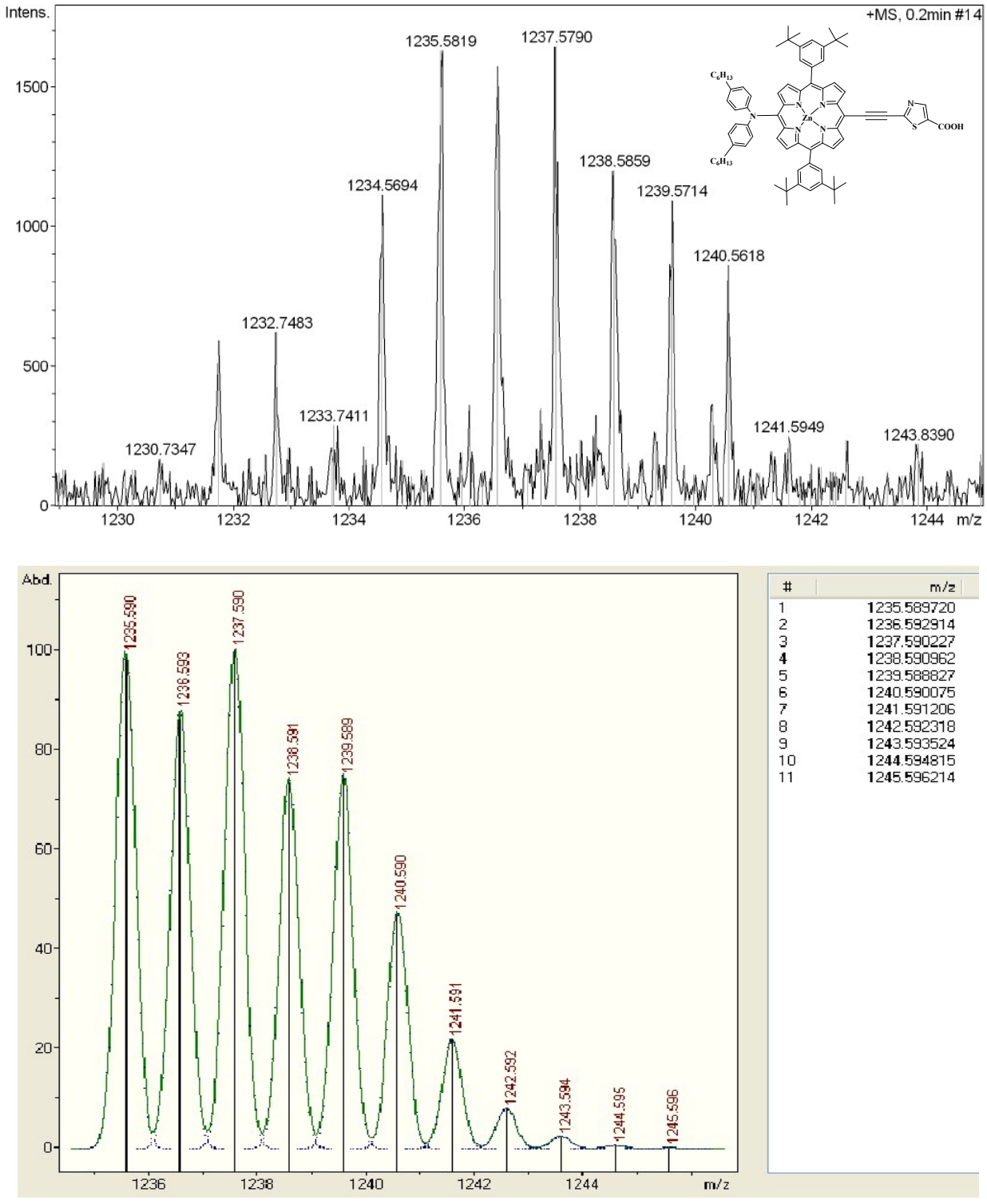


FIG: 9 Observed (top) and simulated (bottom) high-resolution ESI-MS of Compound **2 (CNUTBU)**

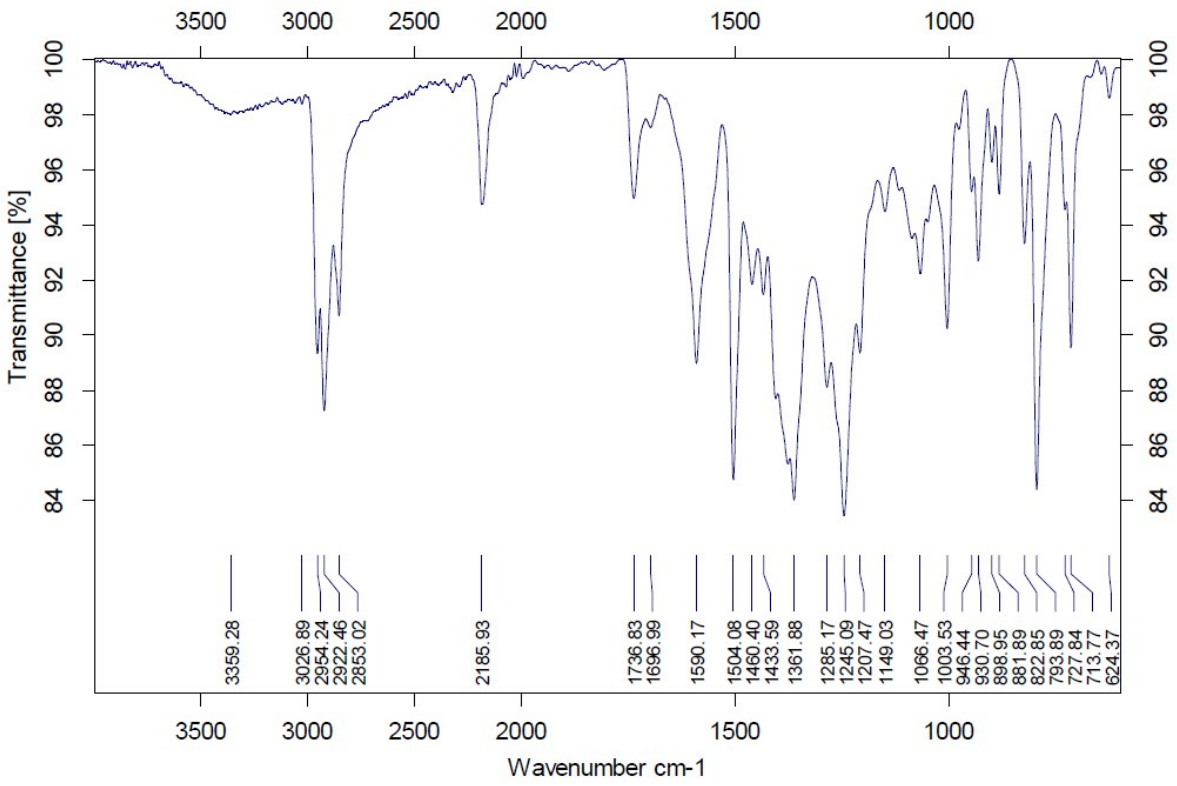


FIG: 10 FT-IR SPECTRUM OF Compound **2 (CNUTBU)**

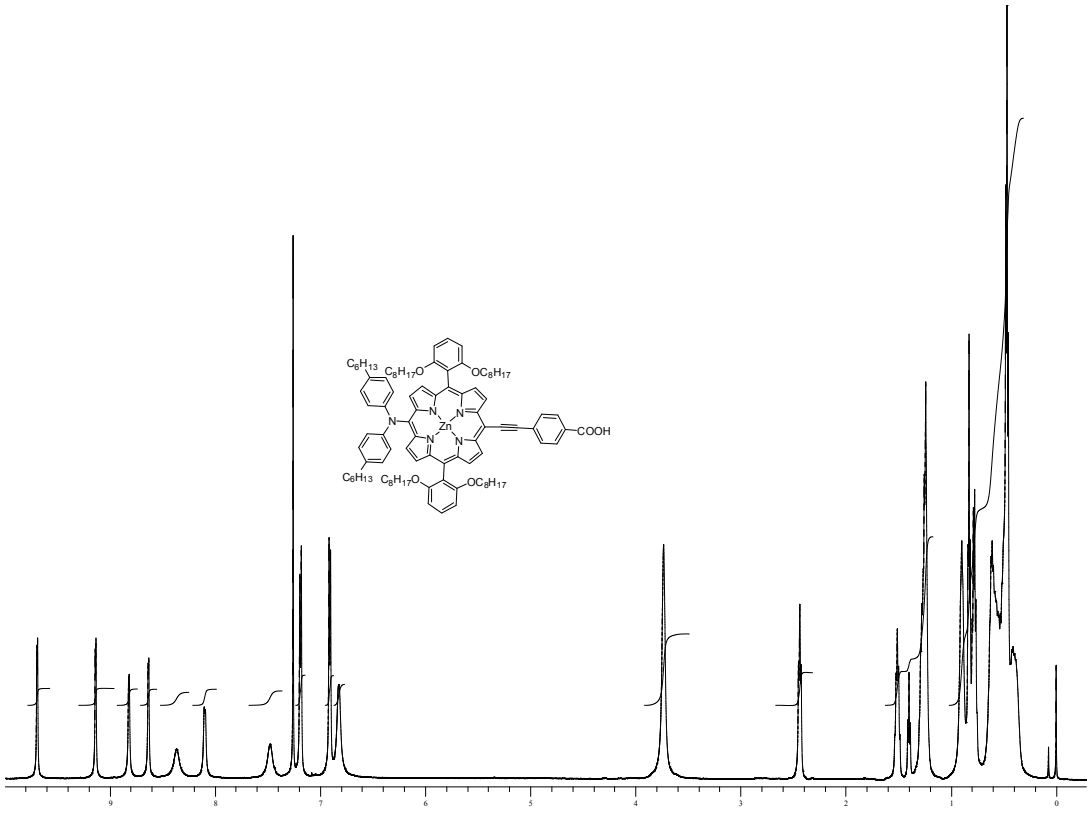


FIG: 11 ^{1}H NMR of Compound **3** in $CDCl_3$

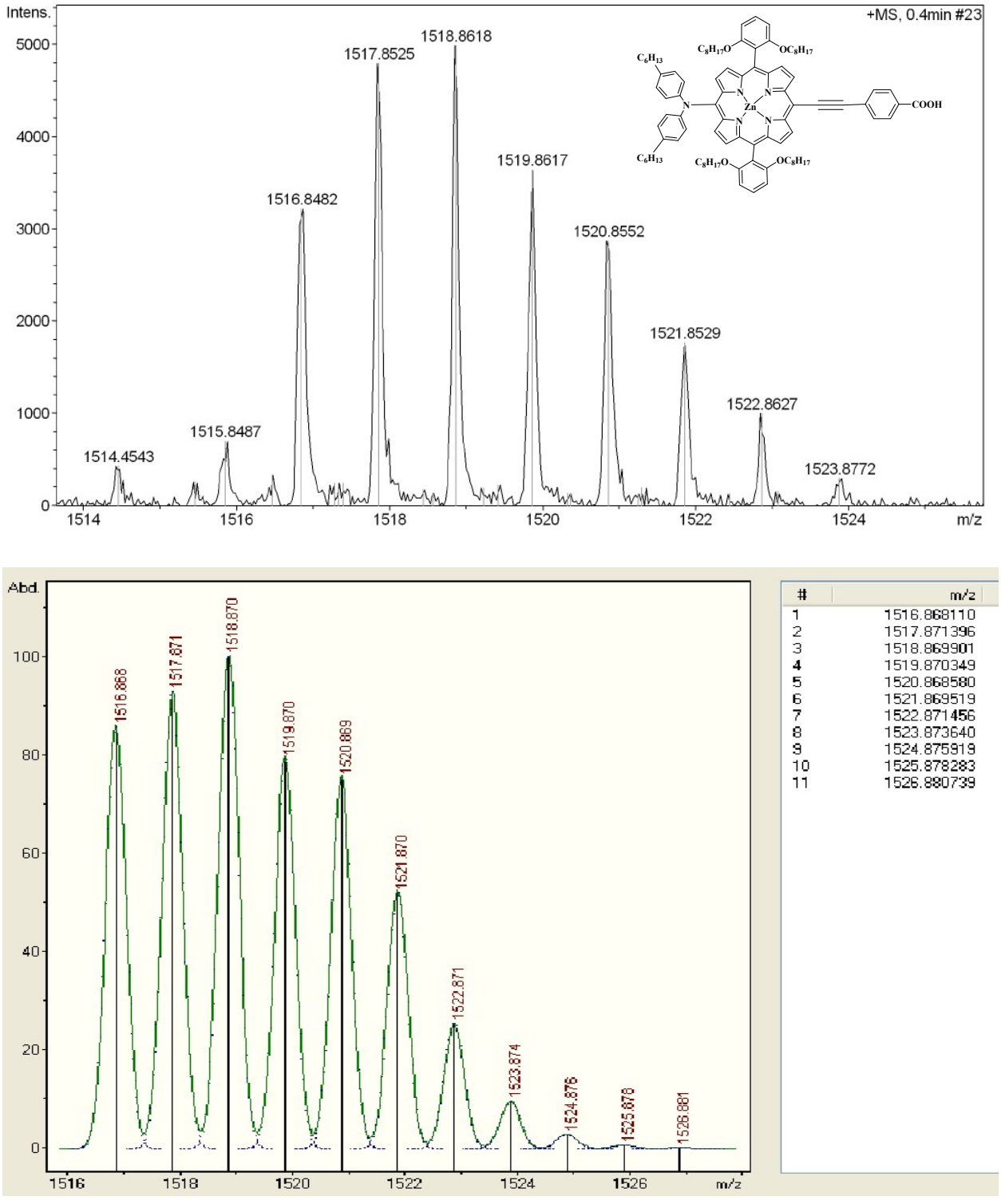


FIG: 12 Observed (top) and simulated (bottom) high-resolution ESI-MS of Compound **3 (YD2OC8)**

Table: The amounts of dye loading, indicated as YD2-OC8, CNU-OC8 and CNU-TBU were determined from the desorption of dye molecules on immersion of transparent 8 μm TiO_2 electrodes in a basic solution of 0.1 M sodium hydroxide in THF and the calibrated absorption.

Dye	Absorbance	Amount (mmol)	Area (cm^2)	Thickness (*u*m)	V (cm^3)	DL ($mmol/cm^3$)	DL per area ($mmol/cm^2$)
YD2OC8	0.50429	0.00004298	0.290	8.57	0.00024853	0.172929919	138.343935
CNUOC8	0.28319	0.00006456	0.278	7.03	0.000195434	0.330347819	264.2782554
CNUTBU	0.28214	0.00004070	0.237	7.93	0.000187941	0.216567872	173.2542973