Electronic Supplementary Material (ESI) for Inorganic Chemistry Frontiers.

Electronic Supporting Information

Synthesis and photophysical properties of *multi*-Ru^{2+} terpyridine complexes: from *di*-nuclear linear to star-shaped *hexa*-nuclear architectures

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General Procedures

Solvents are used in the experimental processes were purified prior to use. All materials were directly purchased through J & K Chemical Technology and used without farther purification. 4-(dodecyloxy)benzaldehyde, 2-acetyridine, bromobenzaldehyde, 1,4-dibromobenzene, hexabromobenzene and $RuCl_3 \cdot 3H_2O$ were also purchased through J & K Chemical Technology. Analytical thin layer chromatography (TLC) was performed on aluminum-backed sheets precoated with Al_2O_3 150 F254 adsorbent (0.25 mm thick; Merck, Germany). Column chromatography was conducted using neutral Al_2O_3 (200-300 mesh) from Sinopharm Chemical Reagent Co. The ^1H NMR spectra were recorded at 25 °C on a Bruker spectrometer operating at 301, 400, 500 MHz for ^1Hor ^{13}C NMR, respectively. Chemical shifts were reported in parts per million (ppm) referenced to the residual solvent peak for ^1H and solvent peak for ^{13}C NMR, respectively. Mass spectra were obtained on a Bruker Quadrupole-time of flight mass spectrometry (Q-TOF-MS). Electronic absorption spectra were recorded with a VARIAN Cary-50 UV-visible spectrophotometer and were corrected for the background spectrum of the solvent. Cyclic voltammetry measurements were performed on a Metrohm Autolab PGSTAT30 potentiost at with a standard three electrode configuration using a glass-carbon working electrode, a platinum-rod auxiliary electrode, and a saturated calomel electrode reference electrode. CV experiments measurements in MeCN and 0.1 M $[(n\text{-}Bu)_4N][PF_6]$.

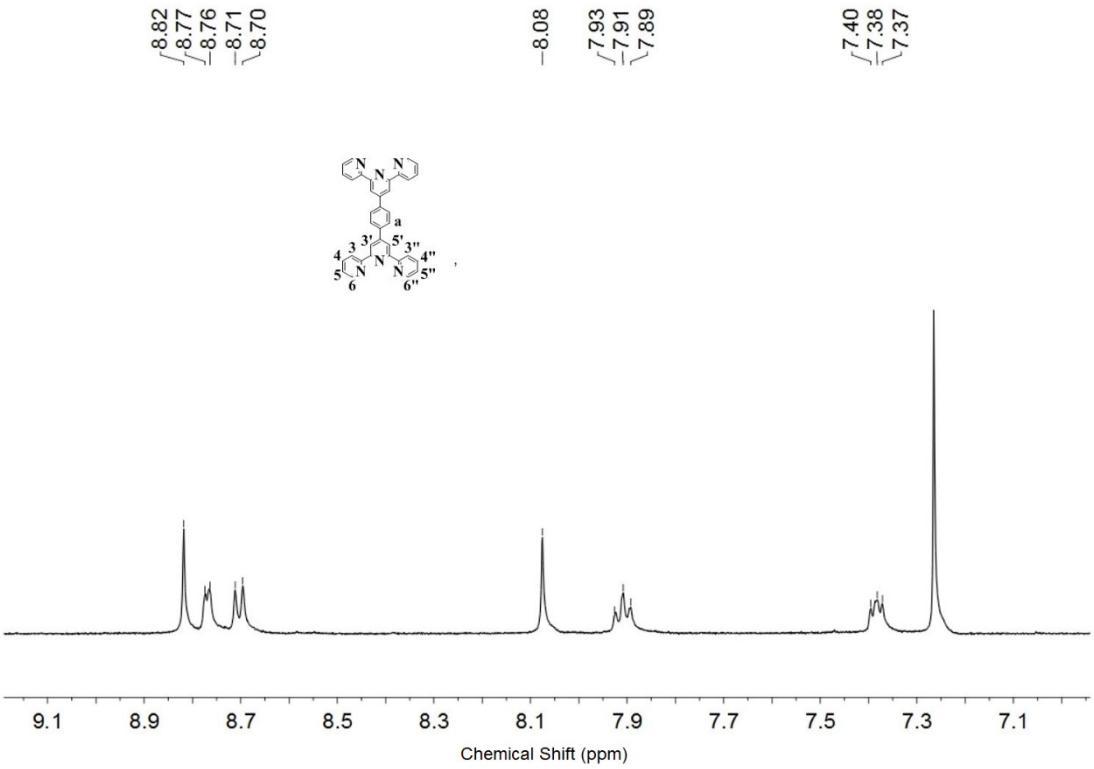

Figure S1. ^{1}H NMR spectrum of **g1**.

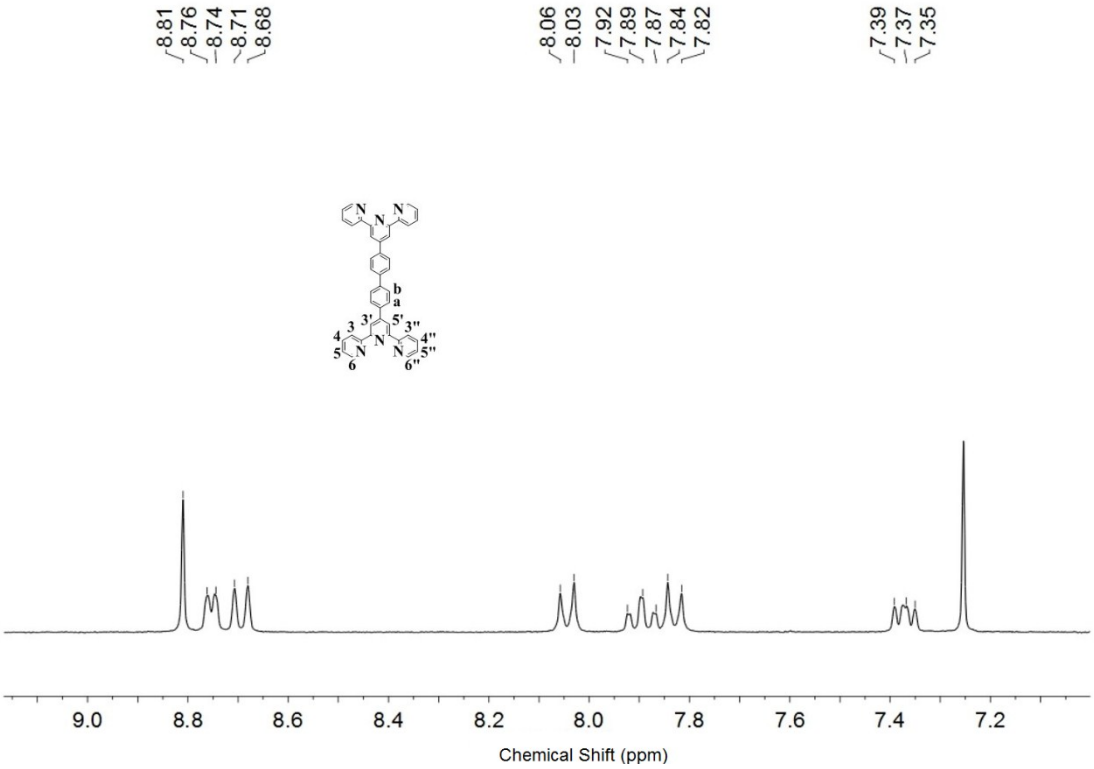

Figure S2. ^{1}H NMR spectrum of **g2**.

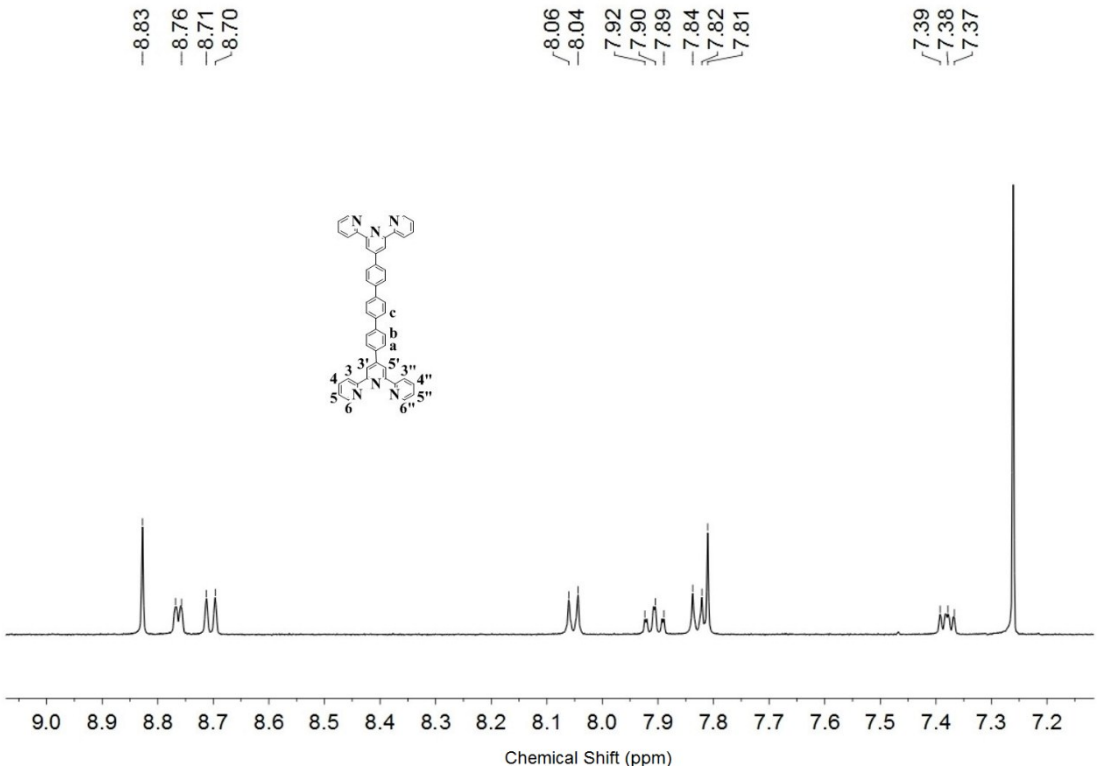

Figure S3. ^{1}H NMR spectrum of **g3**.

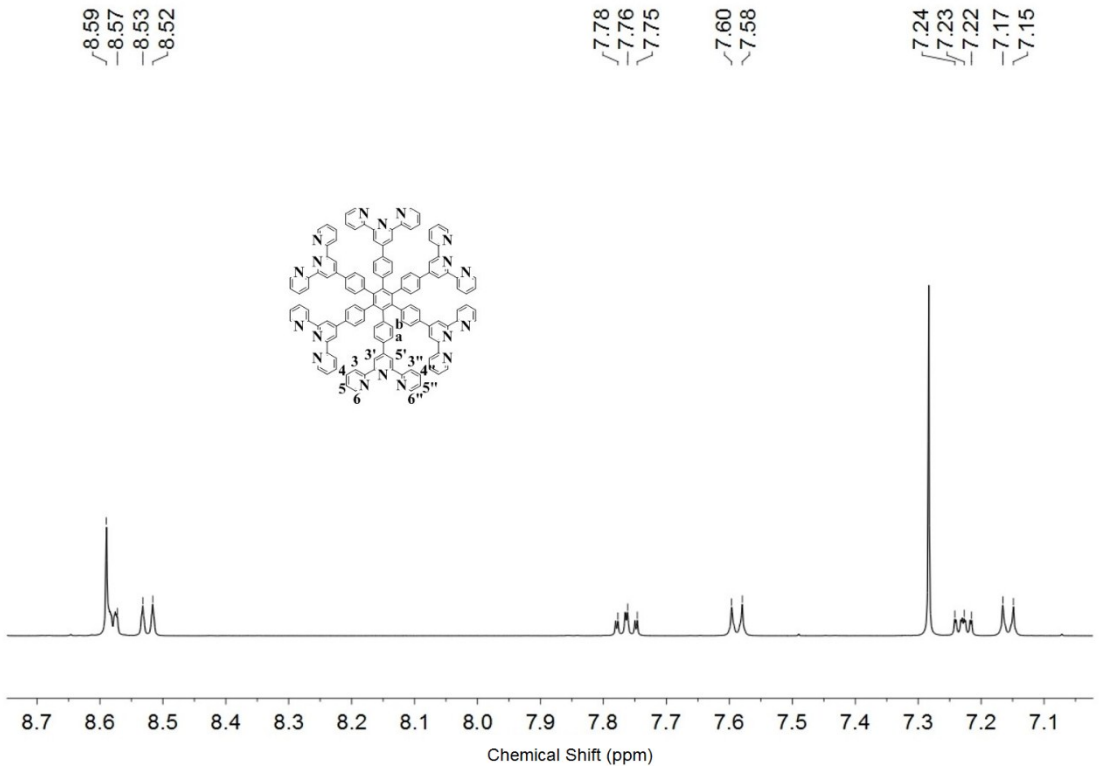

Figure S4. ^{1}H NMR spectrum of **g4**.

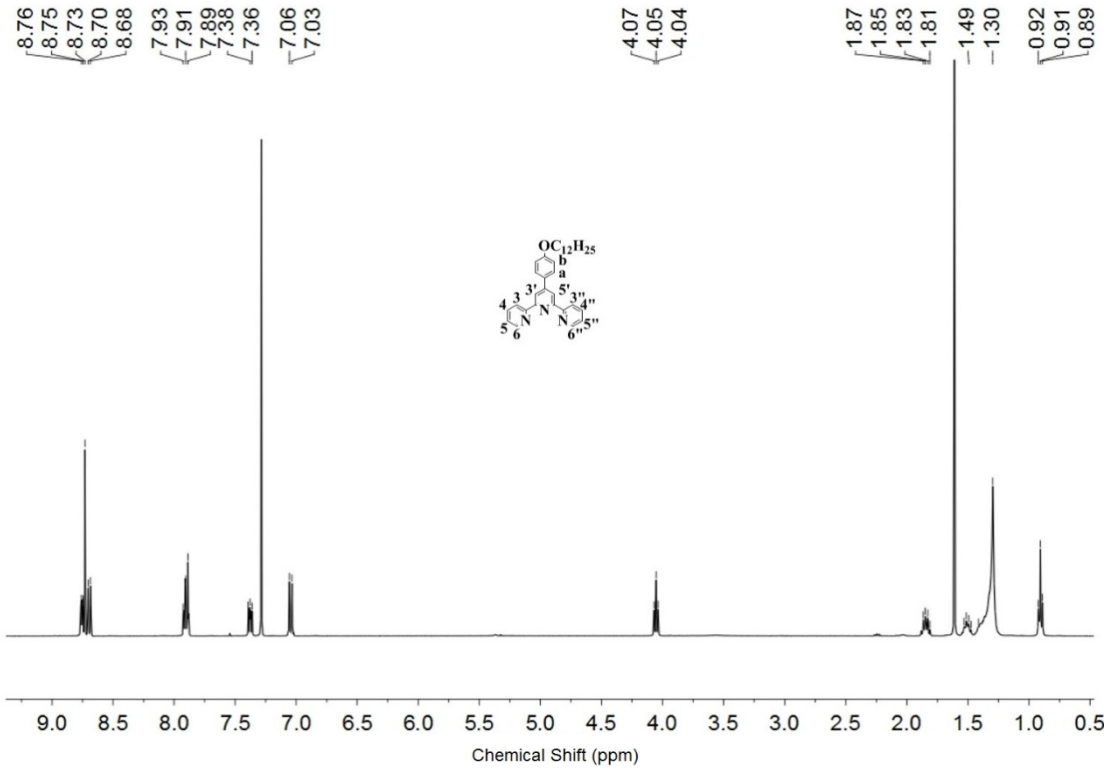

Figure S5. ^{1}H NMR spectrum of **T**.

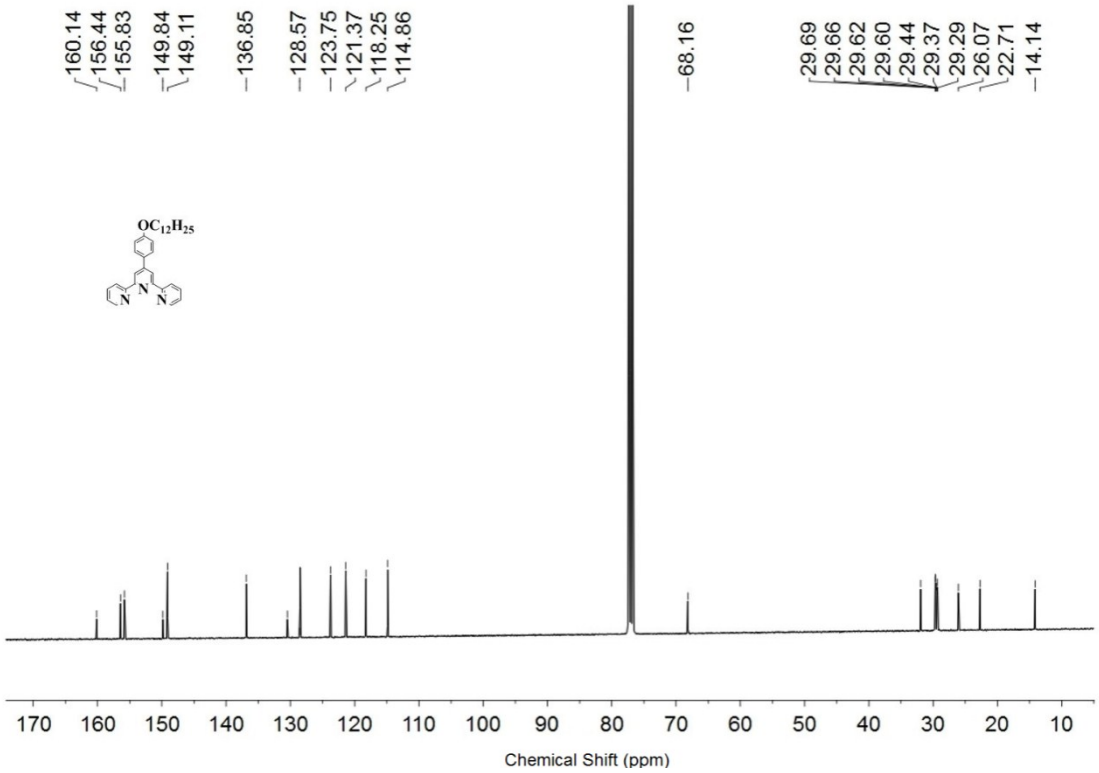

Figure S6. ^{13}C NMR spectrum of **T**.

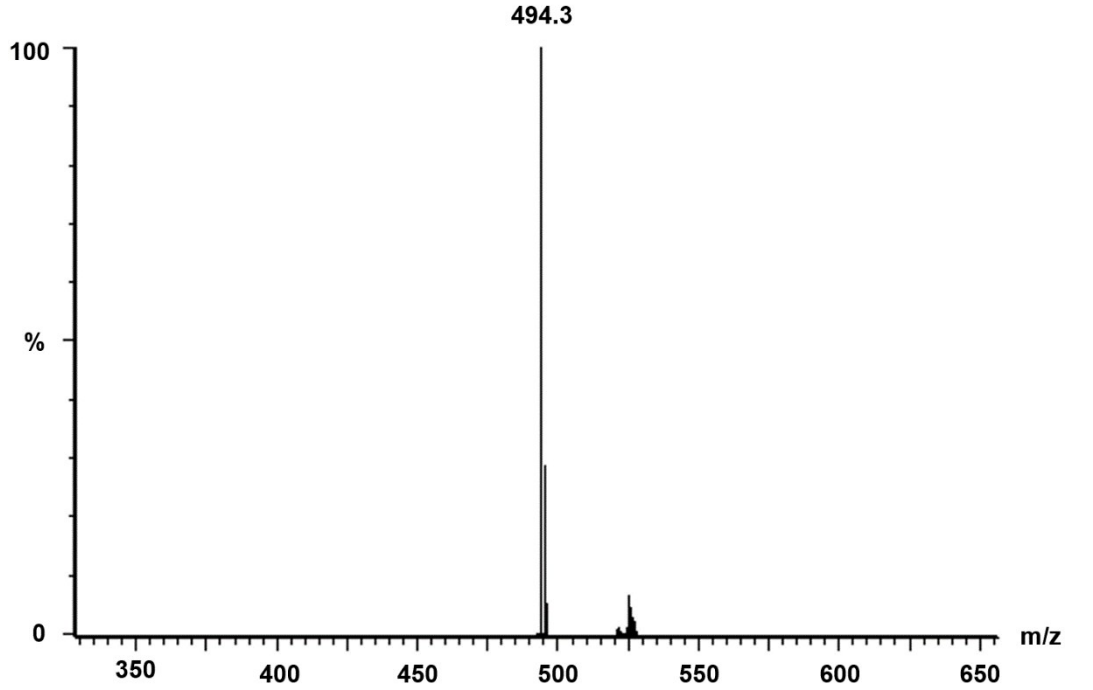

Figure S7. Q-TOF-MS spectrum of **T**.

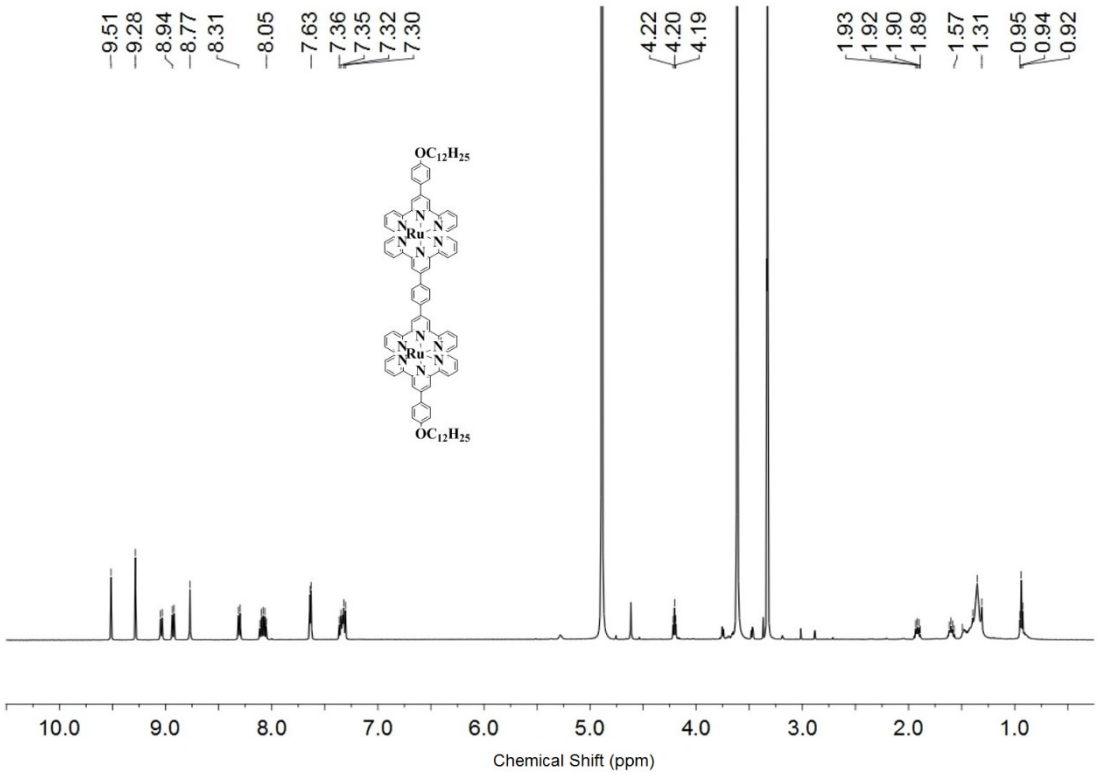

Figure S8. ^{1}H NMR spectrum of **G1**.

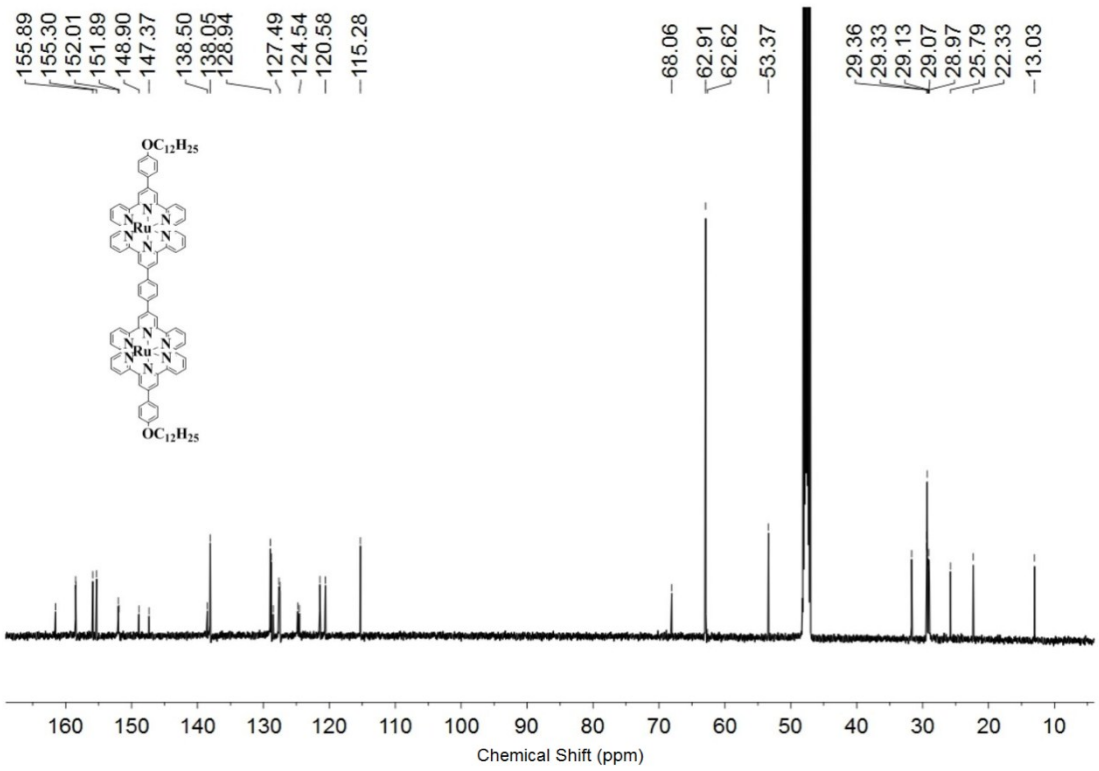

Figure S9. ^{13}C NMR spectrum of **G1**.

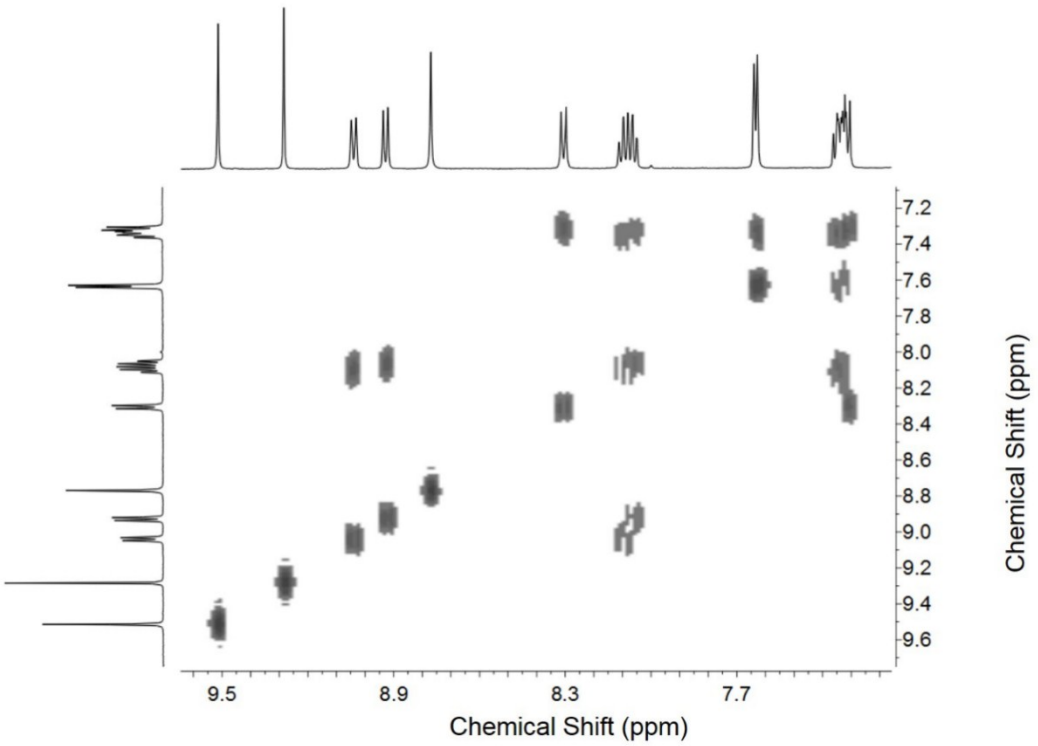

Figure S10. COSY spectrum of **G1**.

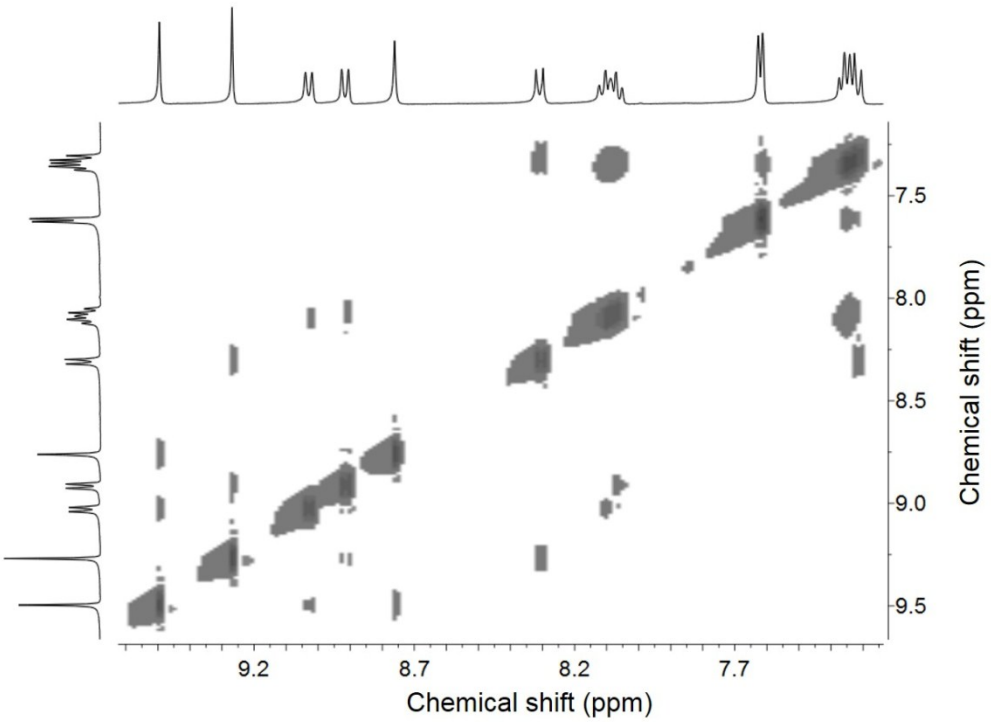

Figure S11. NOESY spectrum of **G1**.

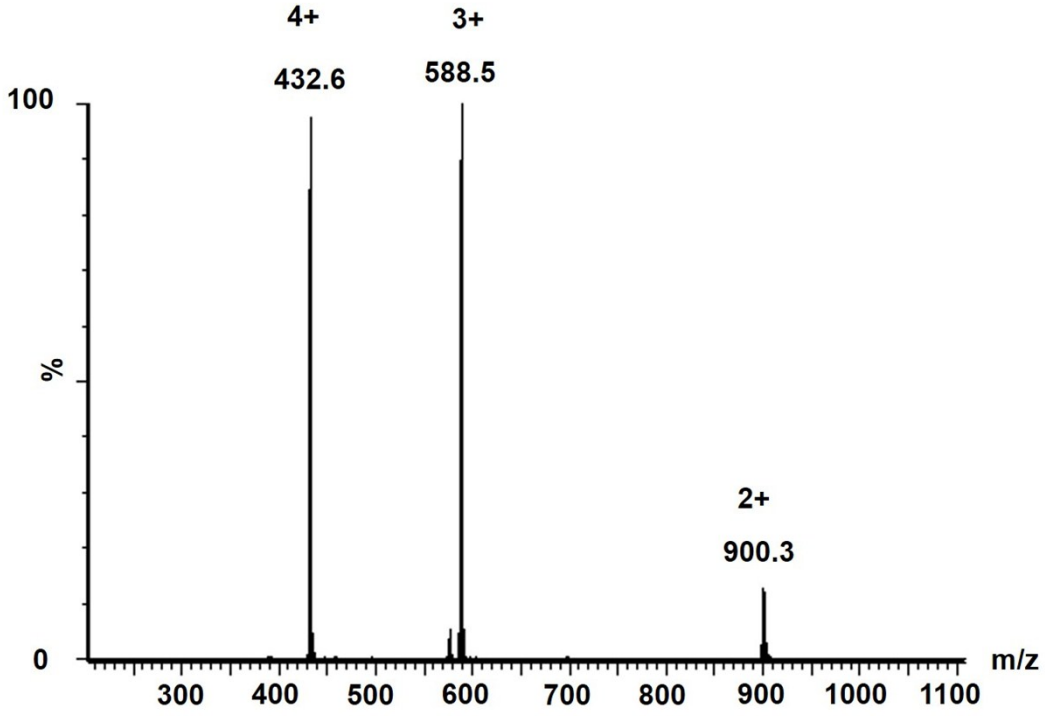

Figure S12. Q-TOF-MS spectrum of **G1**.

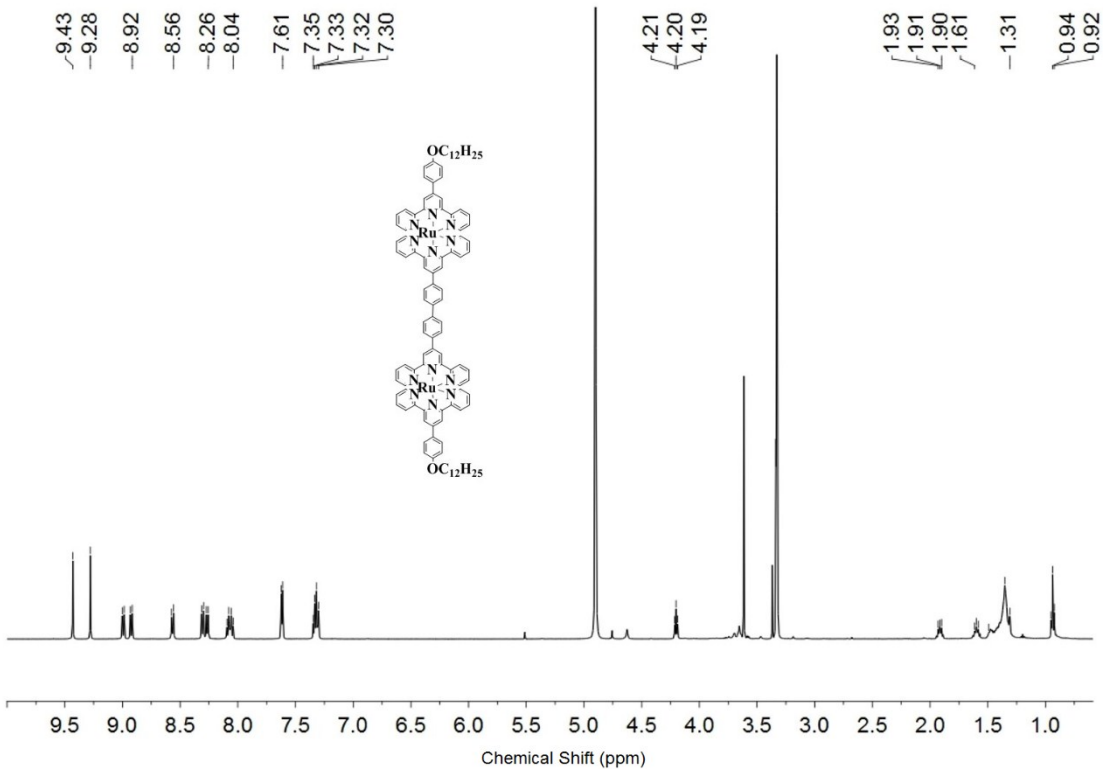

Figure S13. ^{1}H NMR spectrum of **G2**.

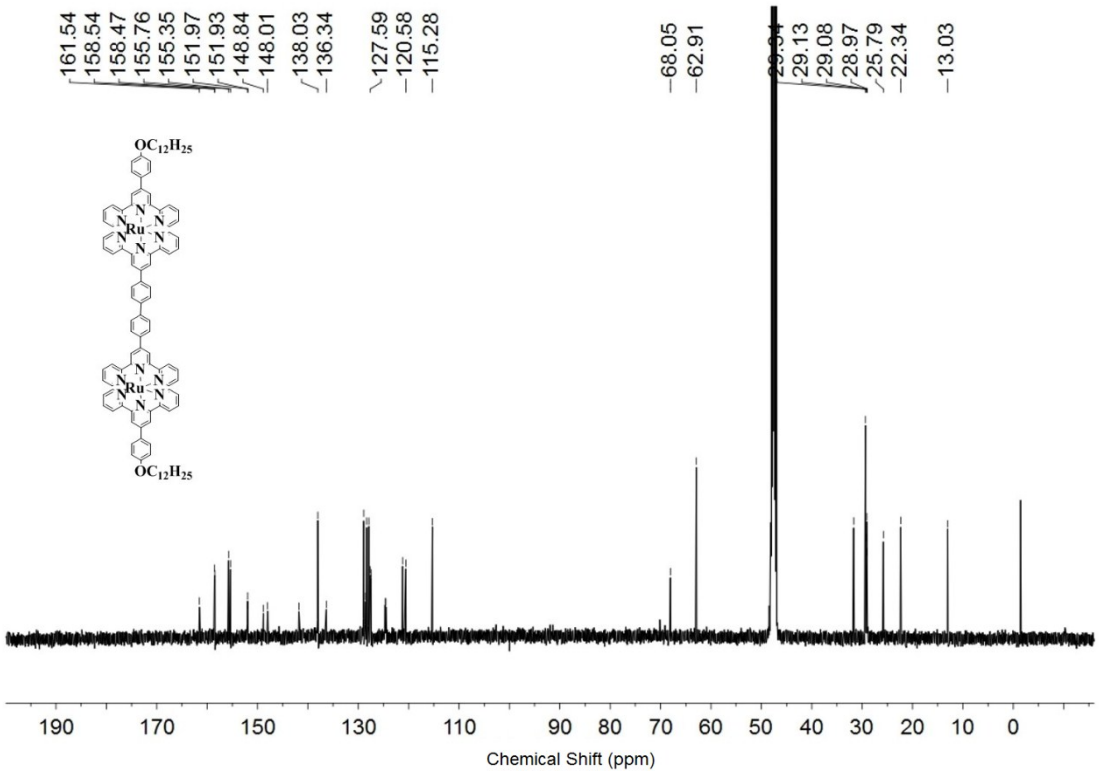

Figure S14. ^{13}C NMR spectrum of **G2**.

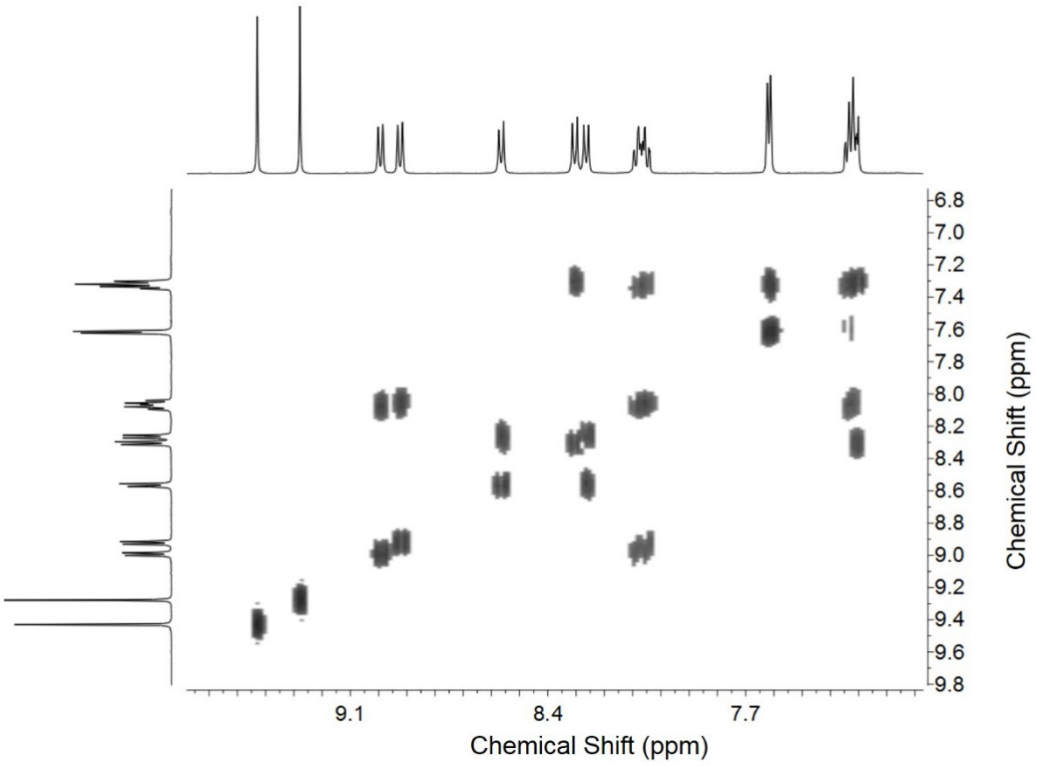

Figure S15. COSY spectrum of **G2**.

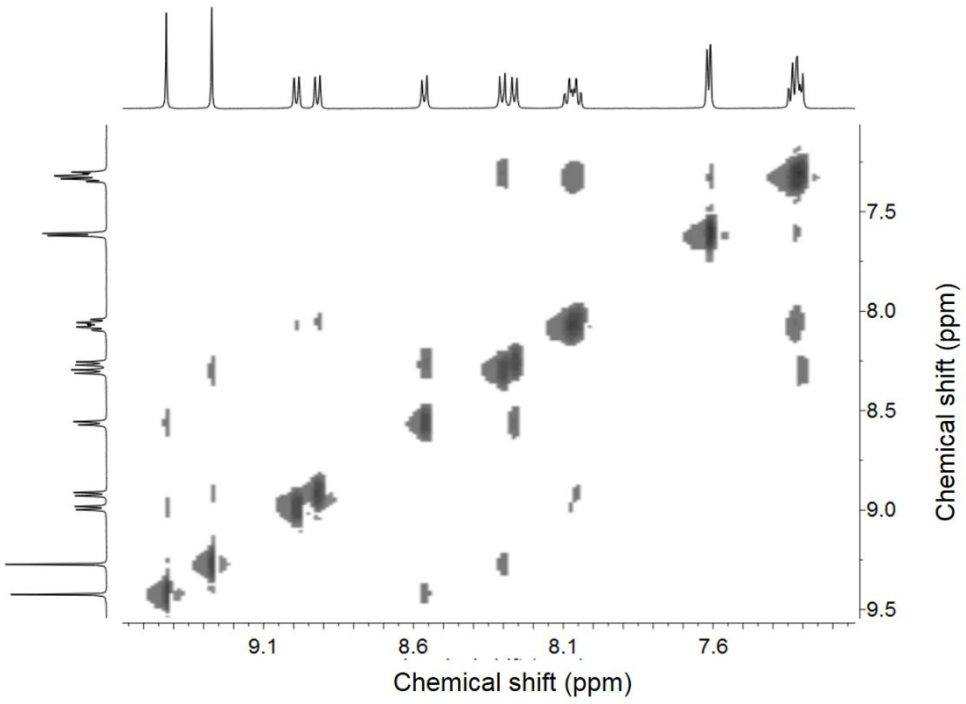

Figure S16. NOESY spectrum of **G2**.

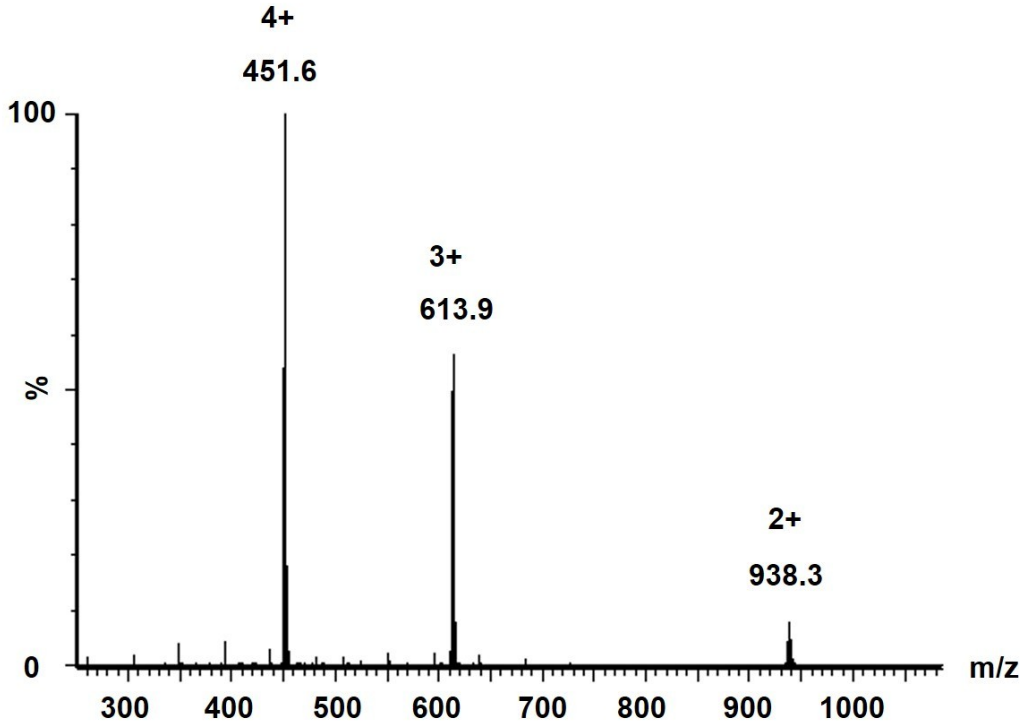

Figure S17. Q-TOF-MS spectrum of **G2**.

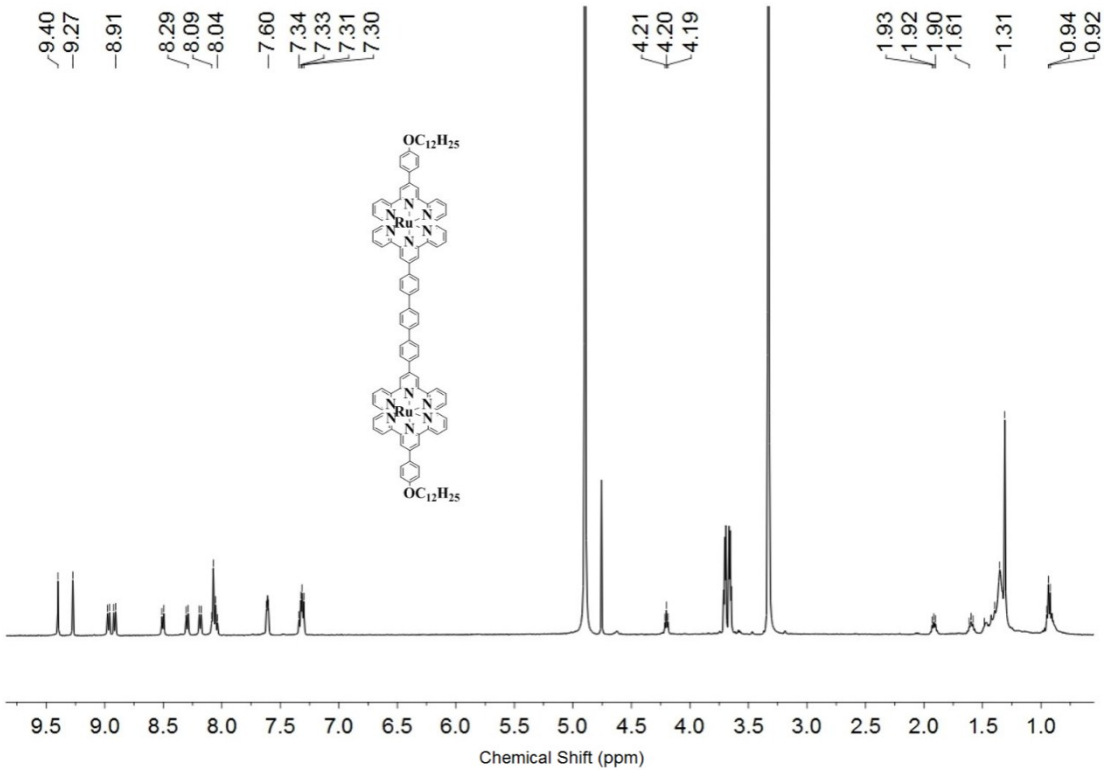

Figure S18. ^{1}H NMR spectrum of **G3**.

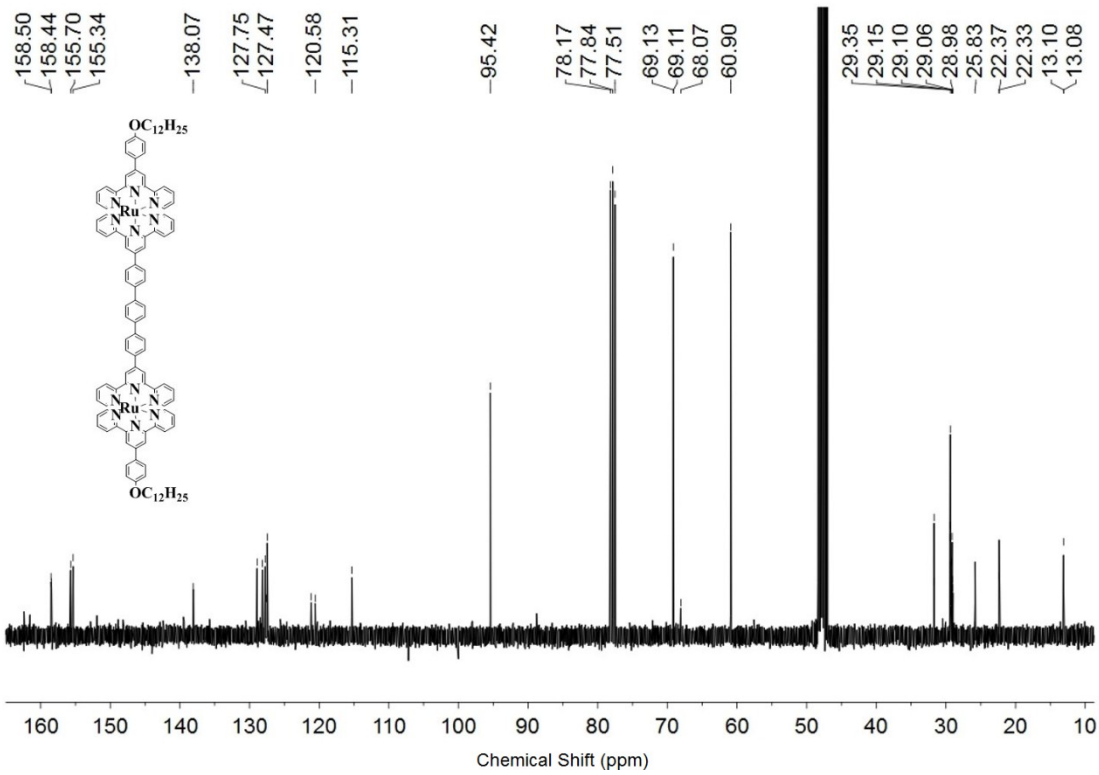

Figure S19. ^{13}C NMR spectrum of **G3**.

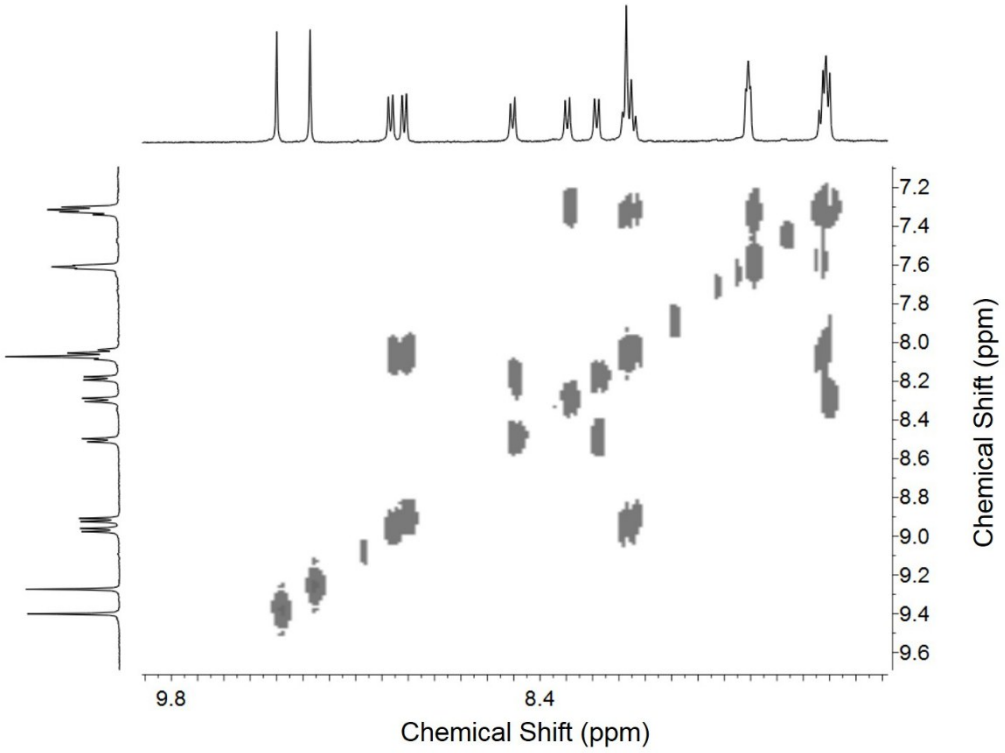

Figure S20. COSY spectrum of **G3**.

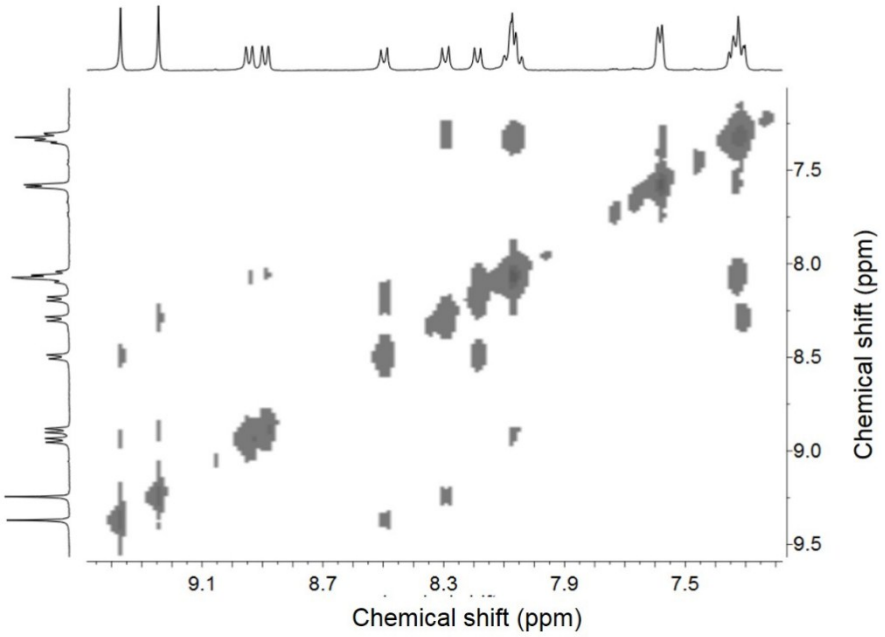

Figure S21. NOESY spectrum of **G3**.

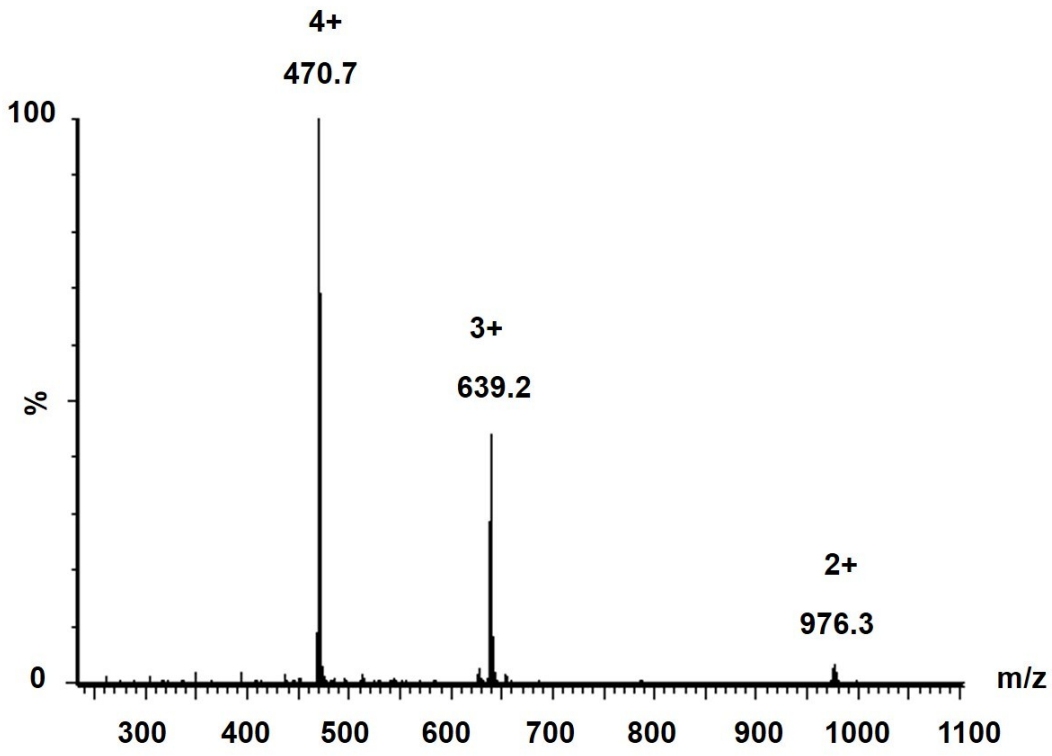

Figure S22. Q-TOF-MS spectrum of **G3**.

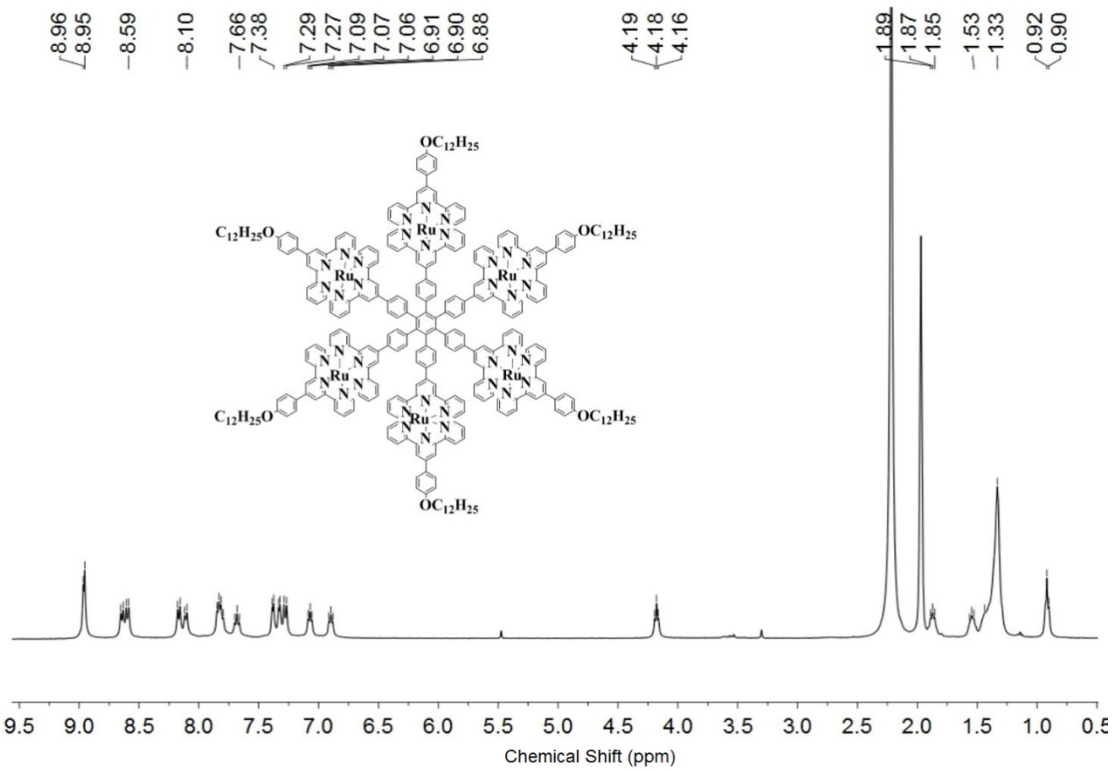

Figure S23. ^{1}H NMR spectrum of **G4**.

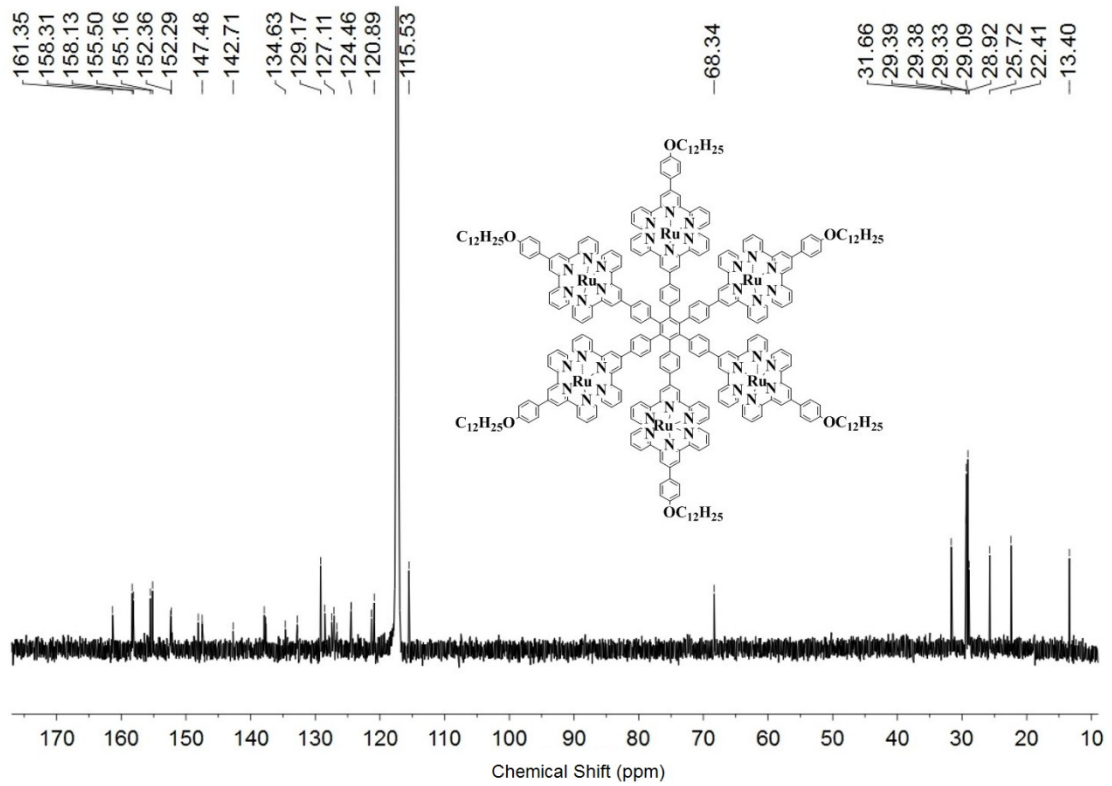

Figure S24. ^{13}C NMR spectrum of **G4**.

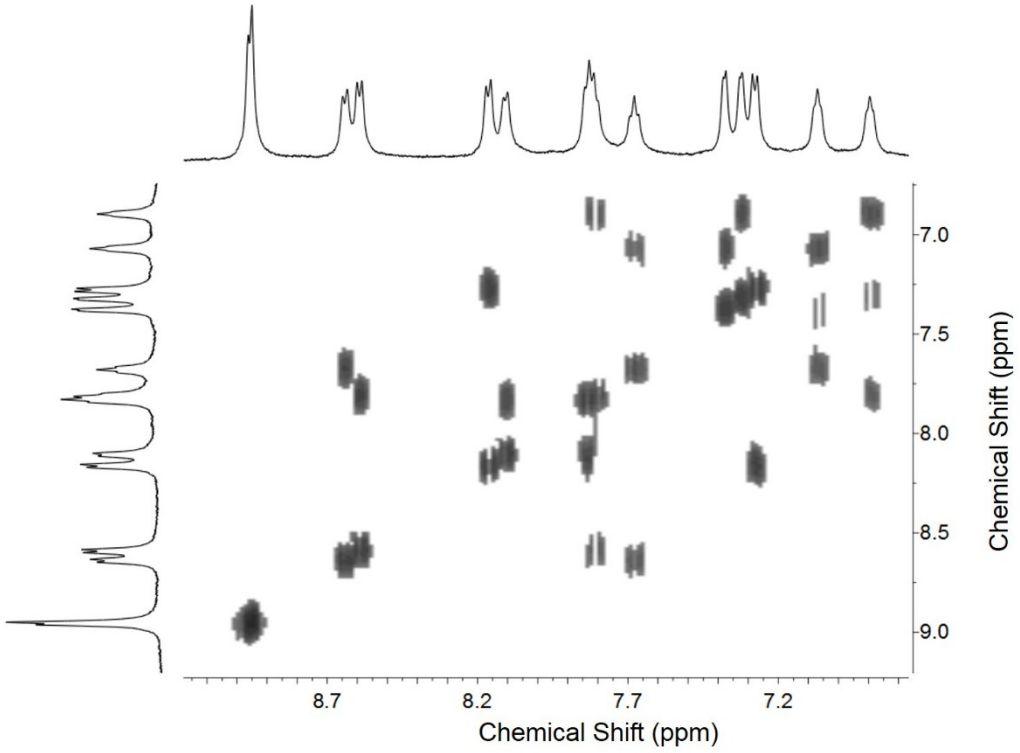

Figure S25. COSY spectrum of **G4**.

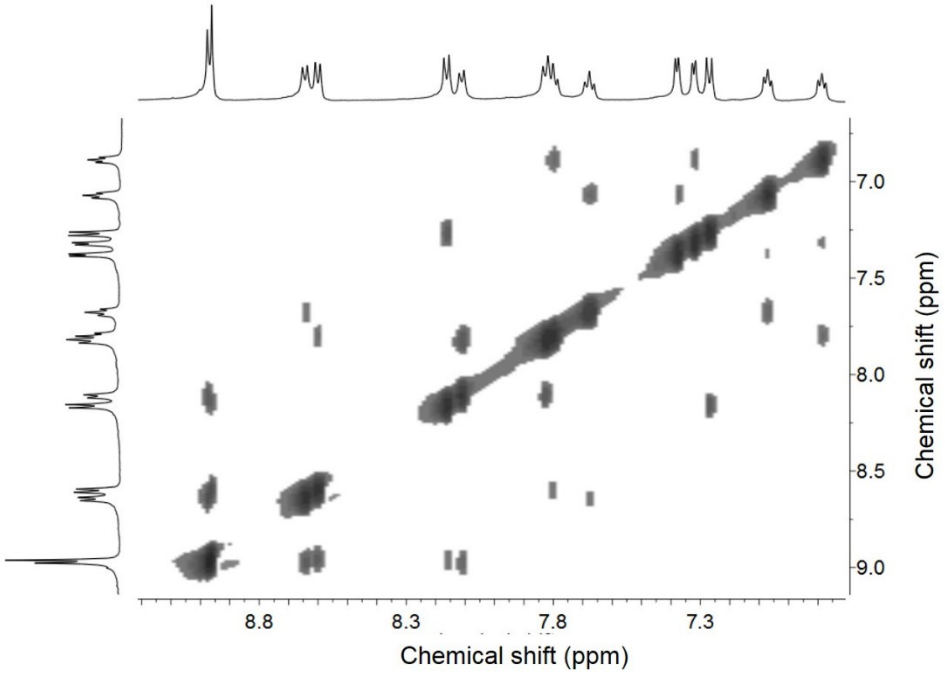

Figure S26. NOESY spectrum of **G4**.

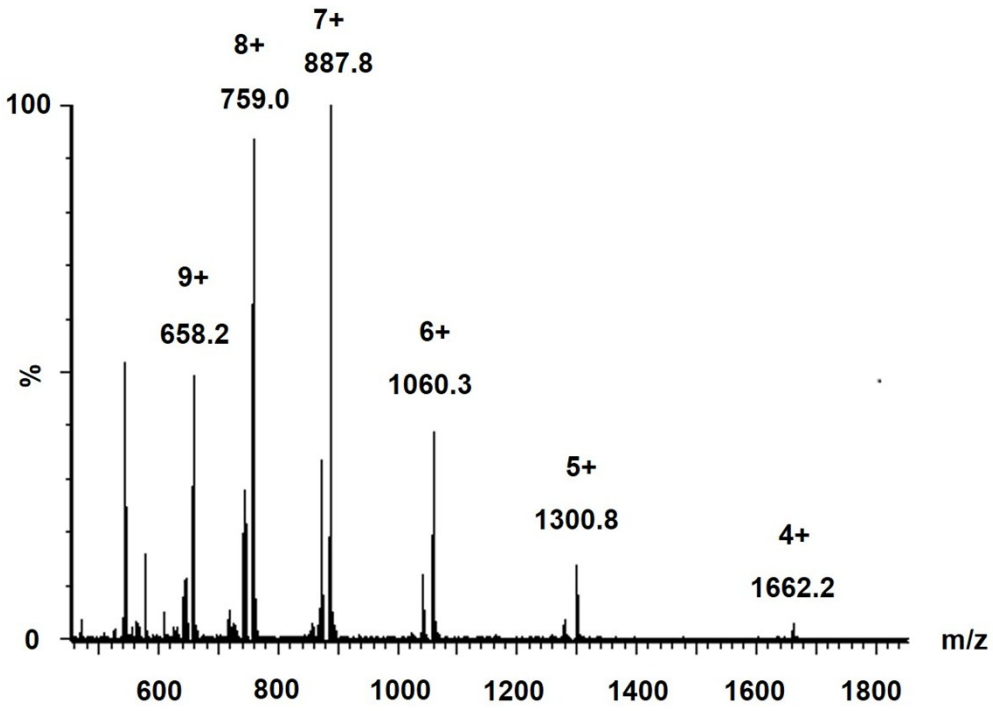

Figure S27. Q-TOF-MS spectrum of **G4**.