

# 12-Vertex *closo*-3,1,2-Ruthenadecarbadodecaboranes with Chelate POP-Ligands: Synthesis, X-Ray Study and Electrochemical Properties

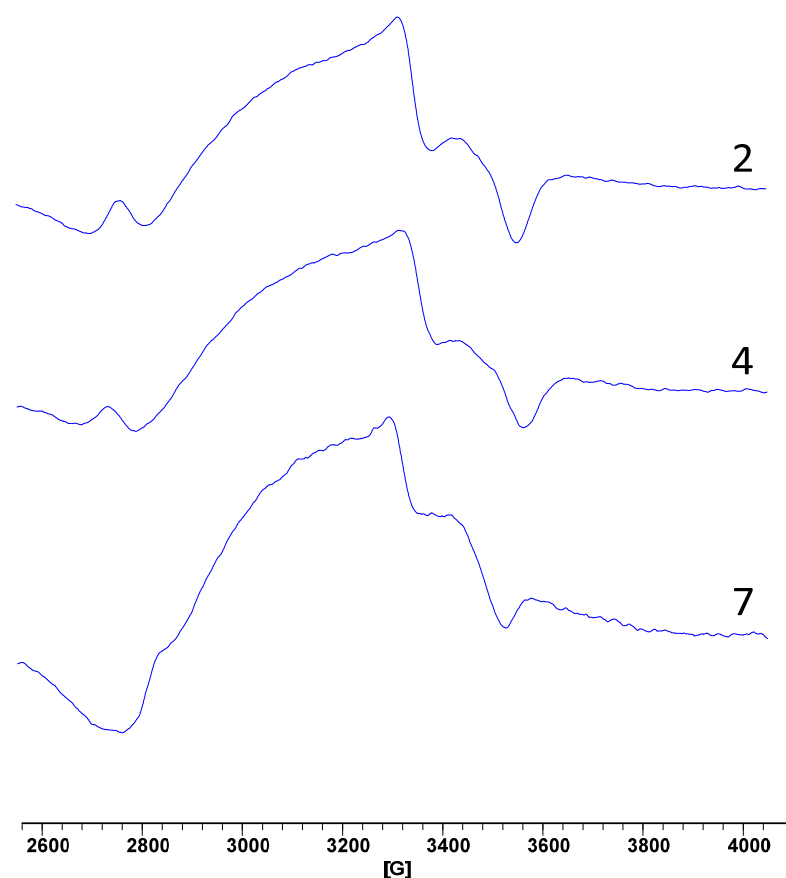
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**Supplementary Materials:** **Figure S1.** Anisotropic EPR spectra of ruthenacarboranes **2**, **4** and **7** in toluene-CH<sub>2</sub>Cl<sub>2</sub> matrix at 150 K; **Figure S2.** <sup>1</sup>H NMR spectrum of complex **3**. Solvent- CD<sub>2</sub>Cl<sub>2</sub>; **Figure S3.** <sup>11</sup>B{<sup>1</sup>H} NMR spectrum of complex **3**. Solvent- CD<sub>2</sub>Cl<sub>2</sub>; **Figure S4.** <sup>1</sup>H NMR spectrum of complex **5**. Solvent- CD<sub>2</sub>Cl<sub>2</sub>; **Figure S5.** <sup>1</sup>H NMR spectrum of complex **8**. Solvent- CD<sub>2</sub>Cl<sub>2</sub>; **Figure S6.** <sup>11</sup>B{<sup>1</sup>H} NMR spectrum of complex **8**. Solvent- CD<sub>2</sub>Cl<sub>2</sub>.



**Figure S1.** Anisotropic EPR spectra of ruthenacarboranes **2**, **4** and **7** in toluene-CH<sub>2</sub>Cl<sub>2</sub> matrix at 150 K

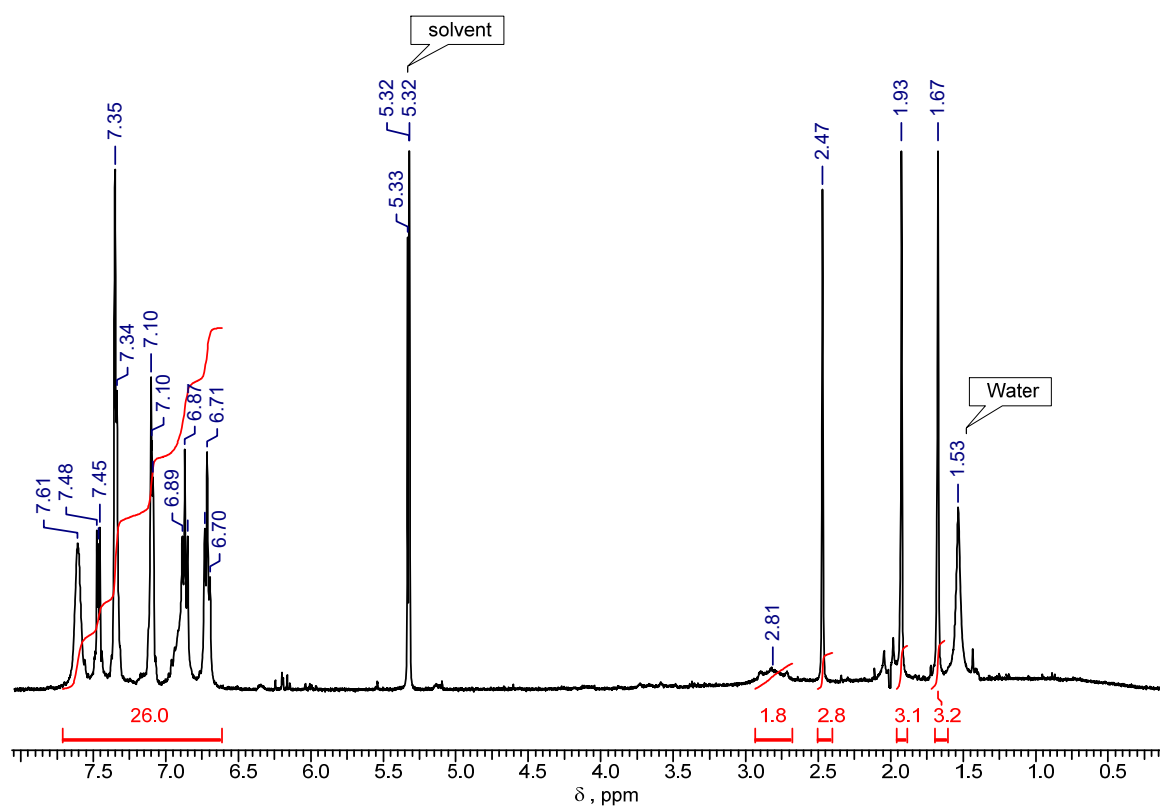


Figure S2.  $^1\text{H}$  NMR spectrum of complex 3. Solvent-  $\text{CD}_2\text{Cl}_2$ .

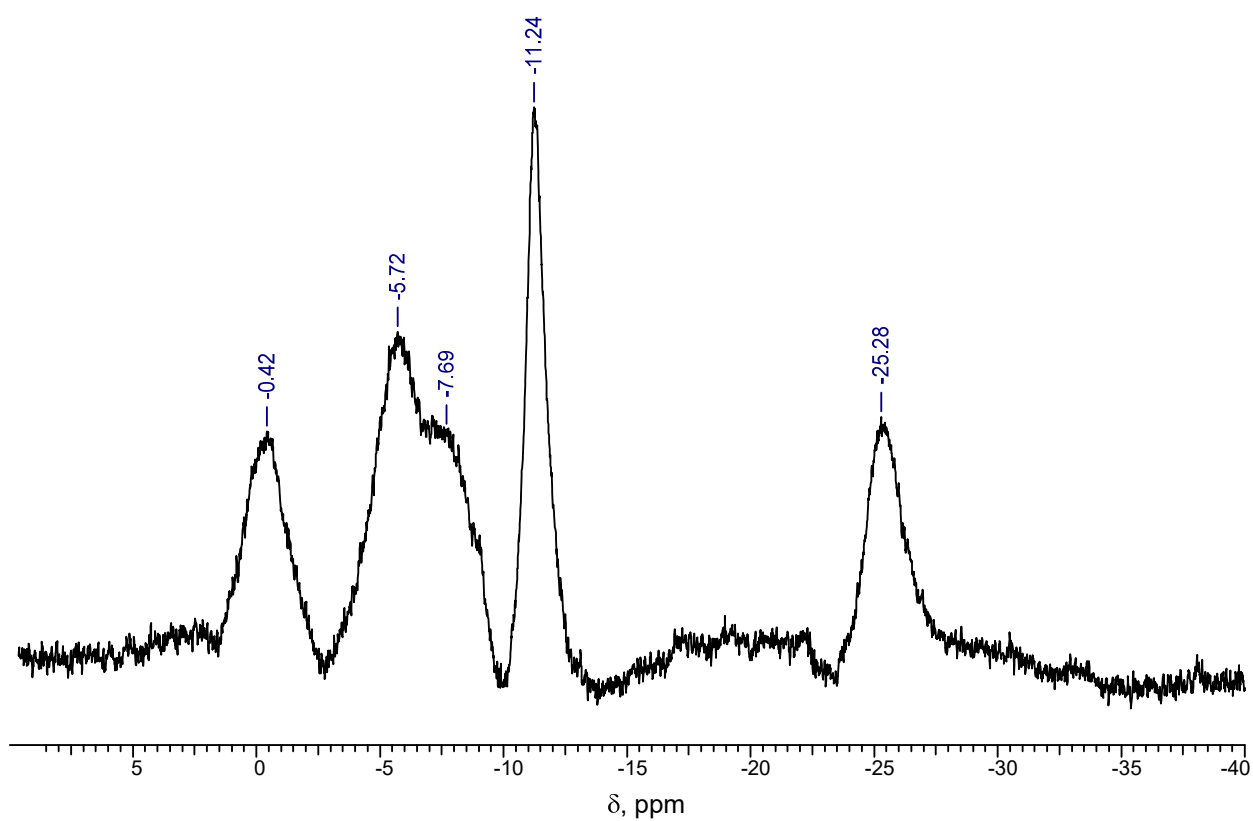
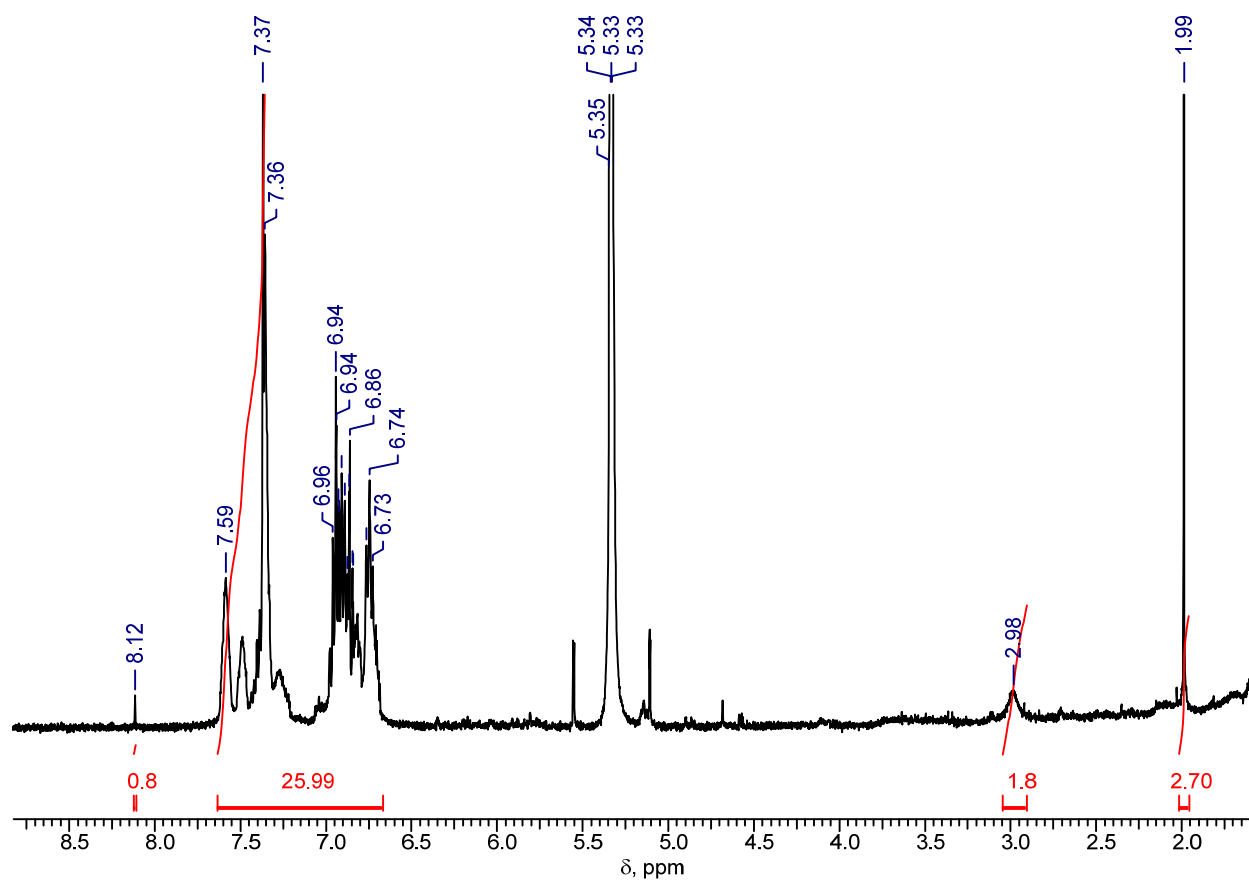
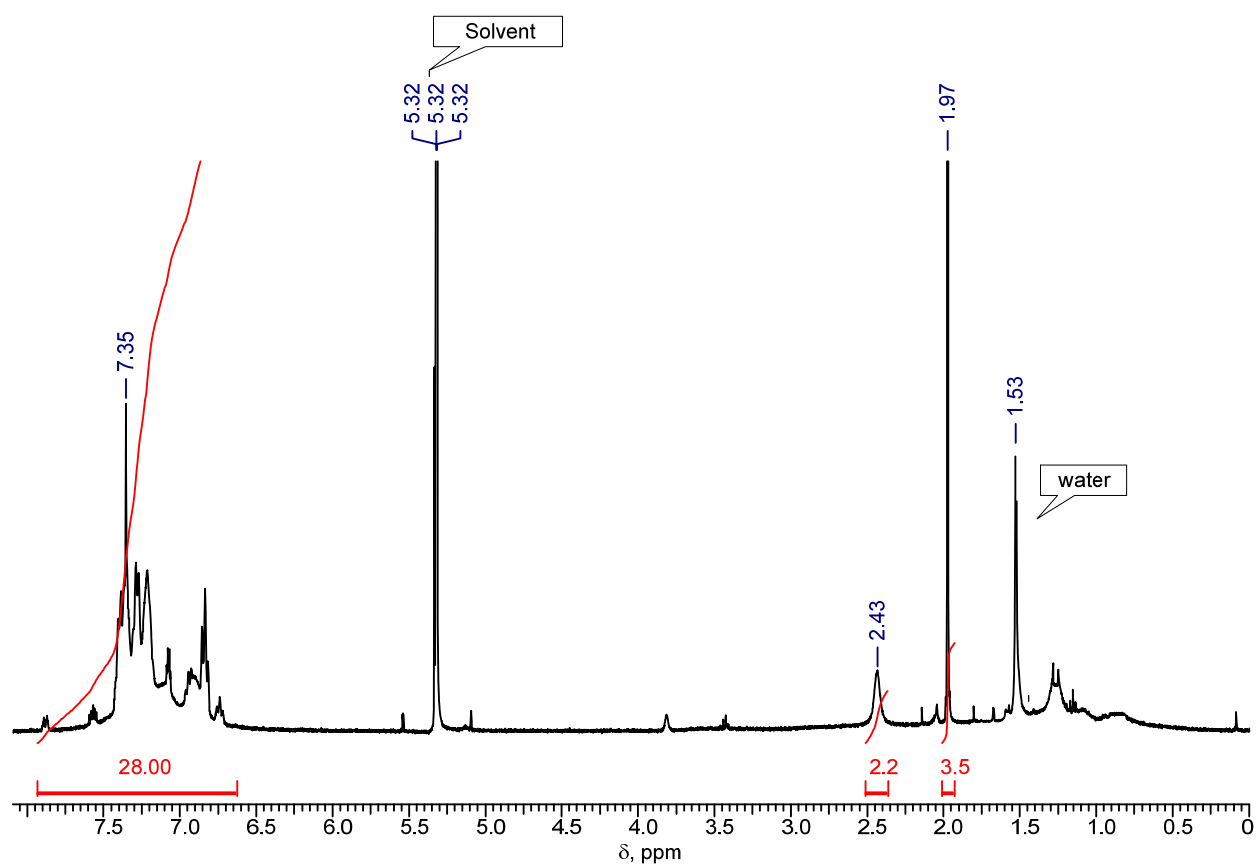


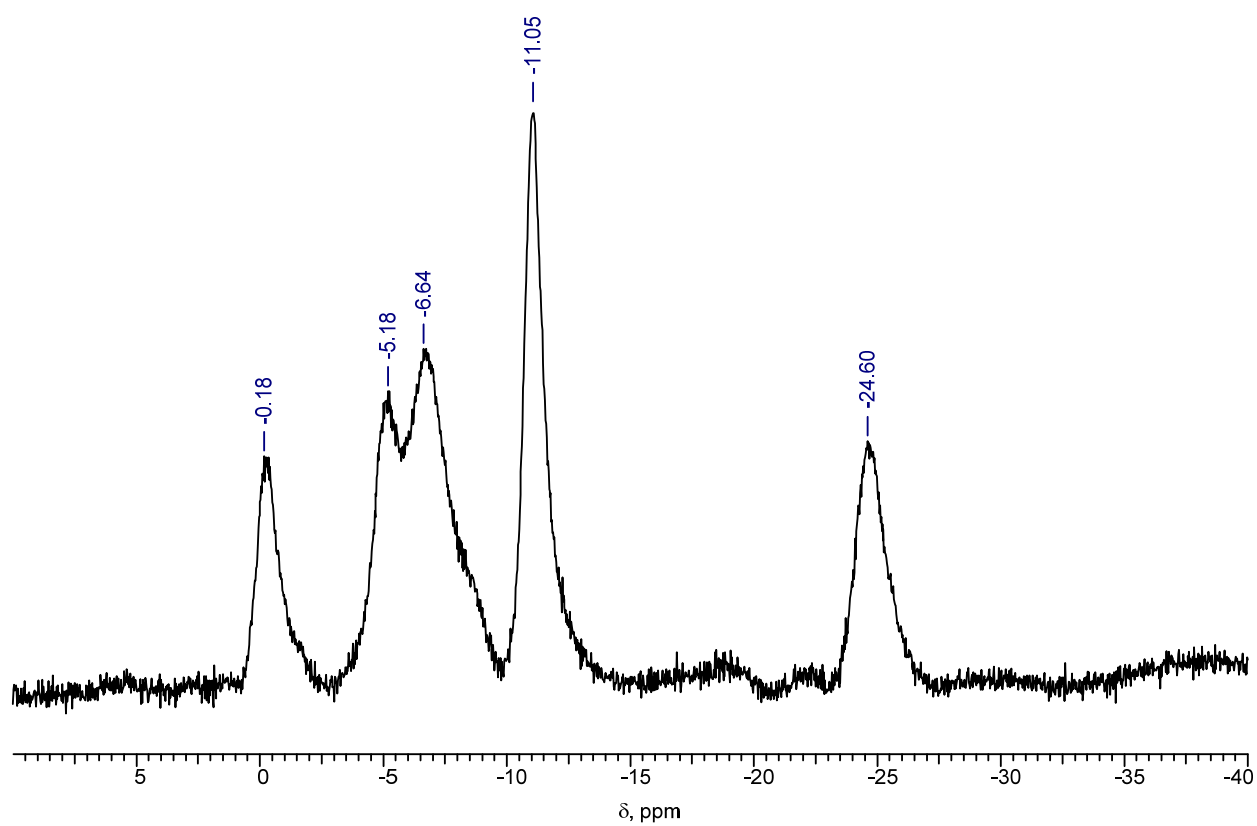
Figure S3.  $^{11}\text{B}\{^1\text{H}\}$  NMR spectrum of complex 3. Solvent-  $\text{CD}_2\text{Cl}_2$ .



**Figure S4.** <sup>1</sup>H NMR spectrum of complex 5. Solvent- CD<sub>2</sub>Cl<sub>2</sub>.



**Figure S5.**  $^1\text{H}$  NMR spectrum of complex **8**. Solvent-  $\text{CD}_2\text{Cl}_2$ .



**Figure S6.**  $^{11}\text{B}\{^1\text{H}\}$  NMR spectrum of complex **8**. Solvent-  $\text{CD}_2\text{Cl}_2$ .