

**Trace oxygen sensitive material based on two porphyrin derivatives
heterodimer complex**

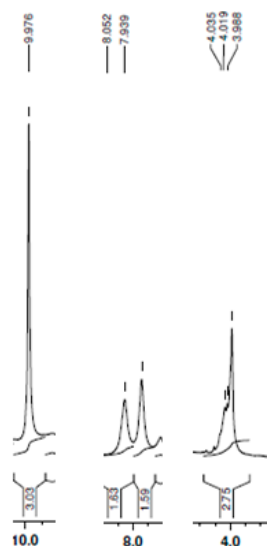
Eugenia Fagadar-Cosma^{*,a}, Valentin Badea^b, Gheorghe Fagadar-Cosma^{*,b},
Anca Palade^a, Anca Lascu^a, Ionela Fringu^a, Mihaela Birdeanu^{a,c}

^a *Institute of Chemistry Timisoara of Romanian Academy, M. Viteazul Ave, No. 24,
300223-Timisoara, Romania, e-mail: efagadar@yahoo.com, fax: +40-256-491824, tel: +40-
256-491818*

^b *Politehnica University Timisoara, Faculty of Industrial Chemistry and Environmental
Engineering, Pta Victoriei 2, 300006-Timisoara, Romania, e-mail: gfagadar@yahoo.com,
fax: +40-256-403021,
tel: +40-256-403000*

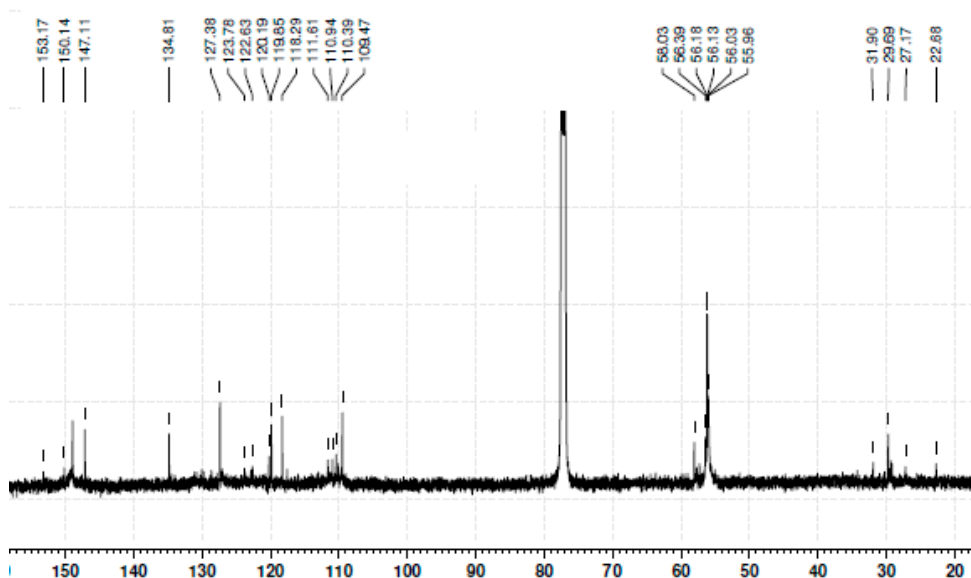
^c *National Institute for Research and Development in Electrochemistry and Condensed
Matter, P. Andronescu Street, No. 1, 300224- Timisoara, Romania.*

1. The ¹H-NMR spectrum of 5,10,15,20-tetrakis(3,4-dimethoxy-phenyl)-porphyrin Fe(III) chloride, compound 1



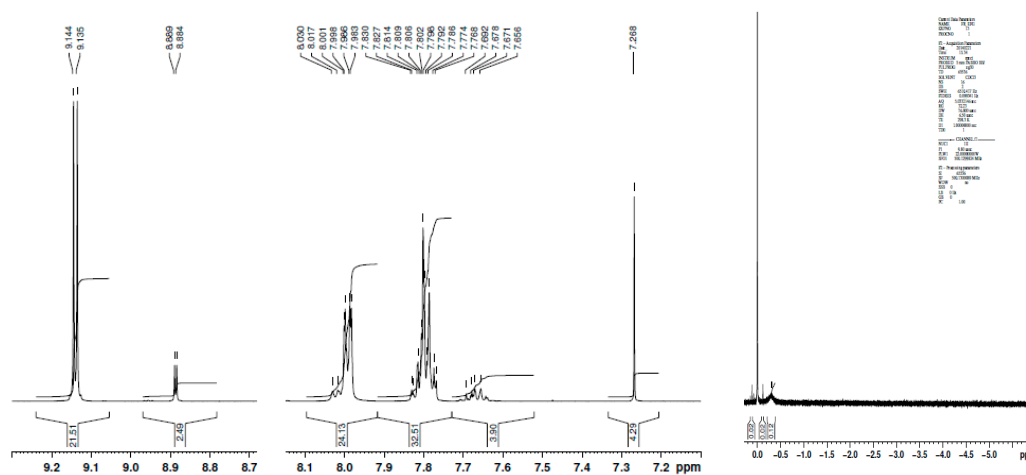
S1 The ¹H-NMR spectrum of 5,10,15,20-tetrakis(3,4-dimethoxy-phenyl)-porphyrin Fe(III) chloride, compound **1**

2. The ^{13}C NMR spectrum of 5,10,15,20-tetrakis(3,4-dimethoxy-phenyl)-porphyrin Fe(III) chloride, compound 1

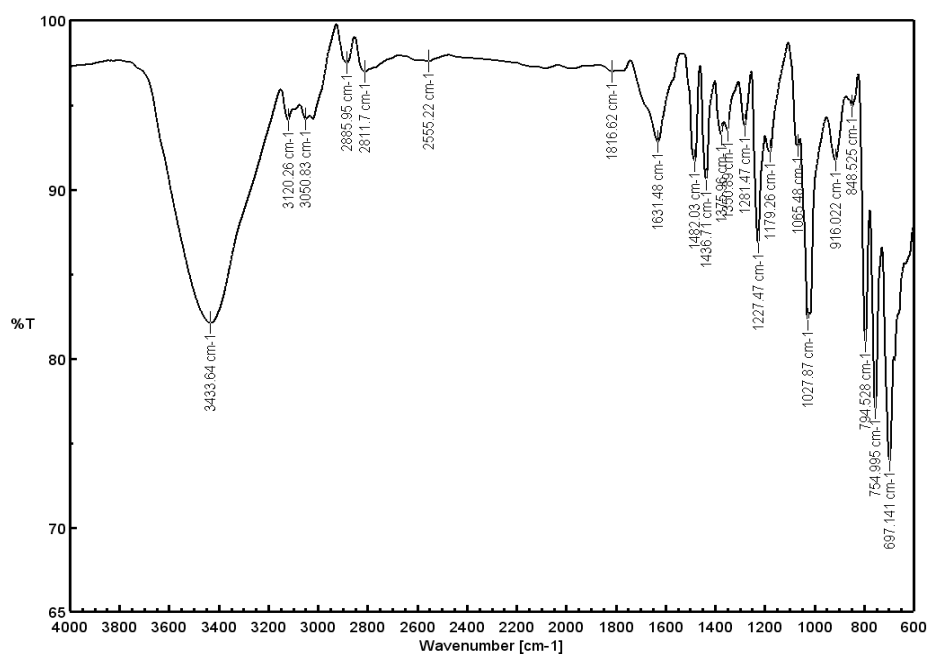


S2 The ^{13}C NMR spectrum of 5,10,15,20-tetrakis(3,4-dimethoxy-phenyl)-porphyrin Fe(III) chloride, compound 1

3. The ^1H -NMR spectrum of (5,10,15,20-Tetraphenylporphinato)dichlorophosphorus (V) chloride, compound 2

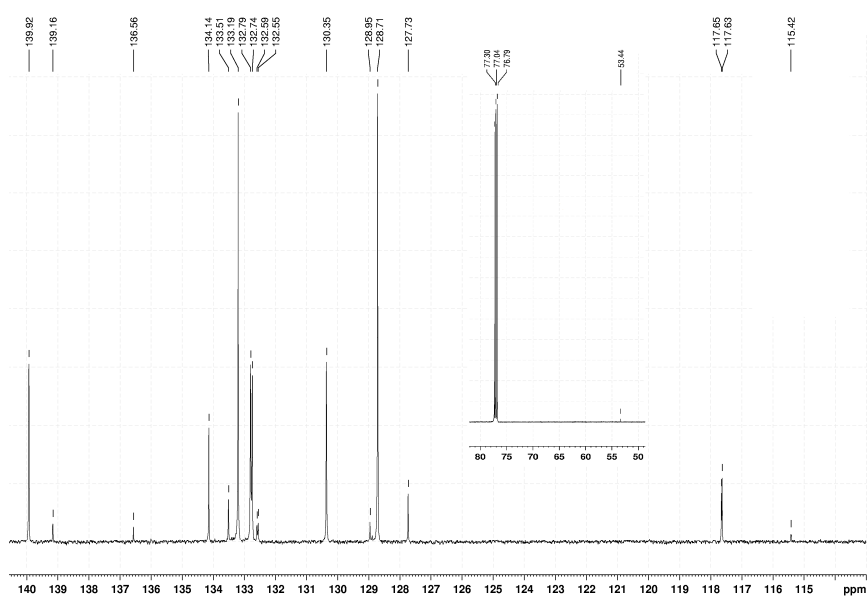


4. FT-IR spectrum of compound 2



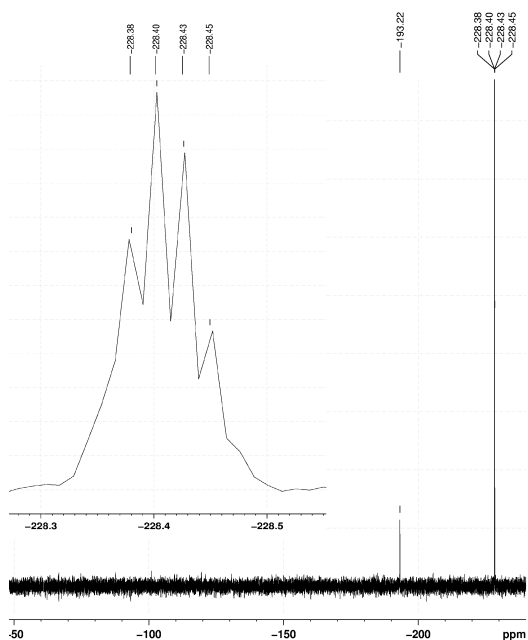
S4 The FT-IR spectrum of (5,10,15,20-Tetraphenylporphinato)dichlorophosphorus (V) chloride, compound 2

5. ¹³C-NMR spectrum of (5,10,15,20-Tetraphenylporphinato)dichlorophosphorus (V) chloride, compound 2



S5 The ¹³C-NMR spectrum of (5,10,15,20-Tetraphenylporphinato)dichlorophosphorus (V) chloride, compound 2

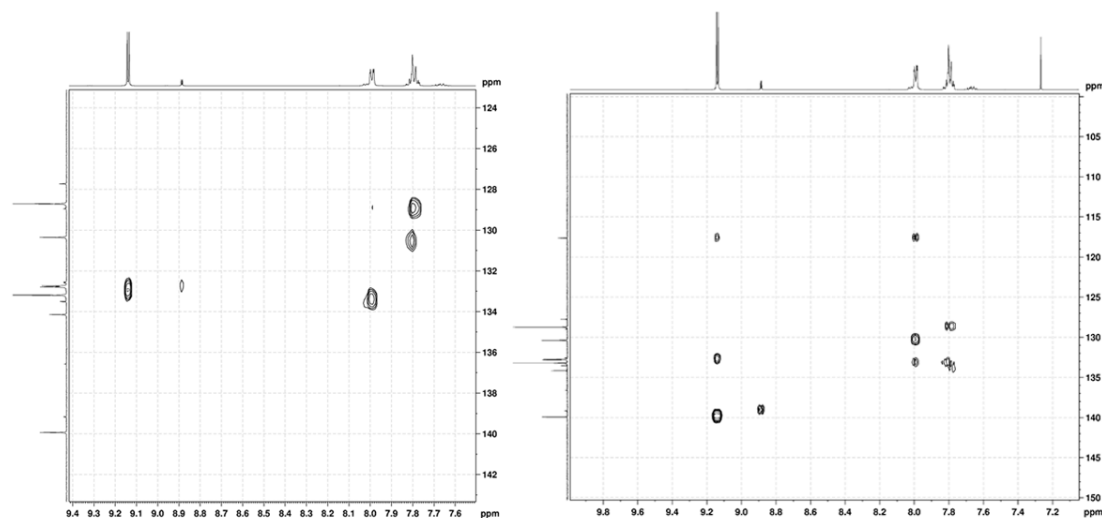
6. The ^{31}P -NMR spectrum of (5,10,15,20-Tetraphenylporphinato)dichlorophosphorus (V) chloride, compound 2



S6 The ^{31}P -NMR spectrum of (5,10,15,20-Tetraphenylporphinato)dichlorophosphorus (V) chloride, compound 2

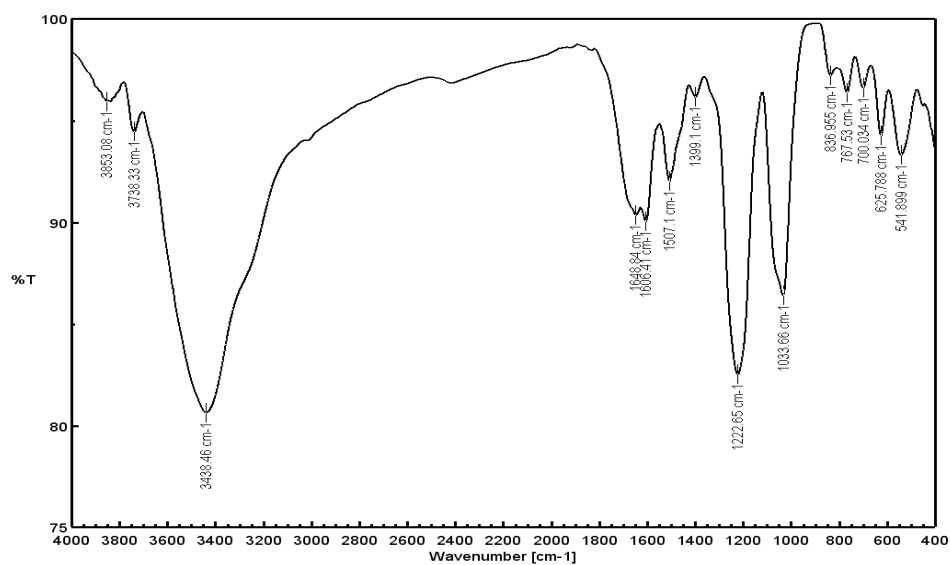
^{31}P -NMR (202.4 MHz, CDCl_3) δ : -193.22 (s, inner P(V) porphyrin, -228.4 (s, outer P(V)porphyrin)

7. HSQC ^1H - ^{13}C and the HMBC spectra of (5,10,15,20-Tetraphenylporphinato)dichlorophosphorus (V) chloride, compound 2

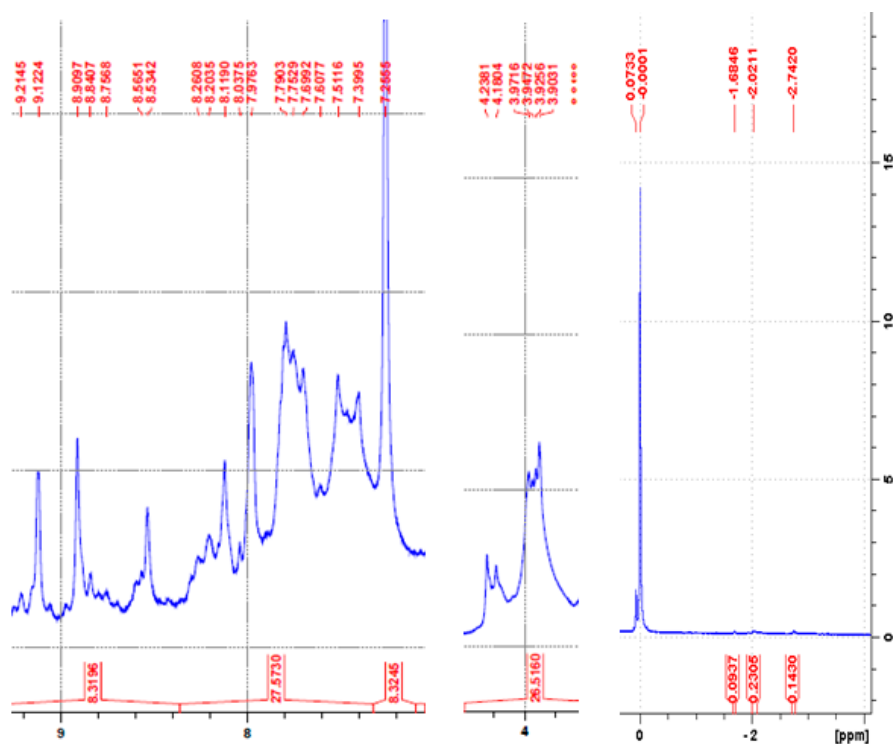


S7 The HSQC ^1H - ^{13}C and the HMBC spectra of (5,10,15,20-Tetraphenylporphinato)dichlorophosphorus (V) chloride, compound 2

8. Characterization of heterodimer complex compound 3



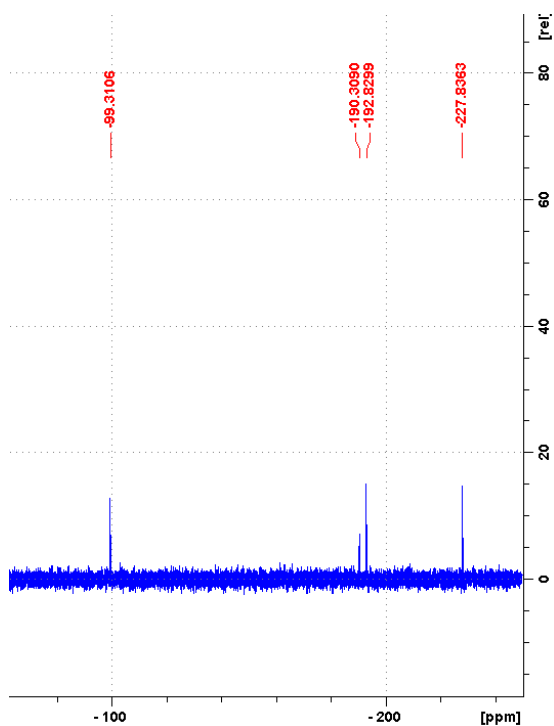
S8. FT-IR spectrum of dimer complex compound 3



S9 ¹H-NMR and of the dimer complex compound 3

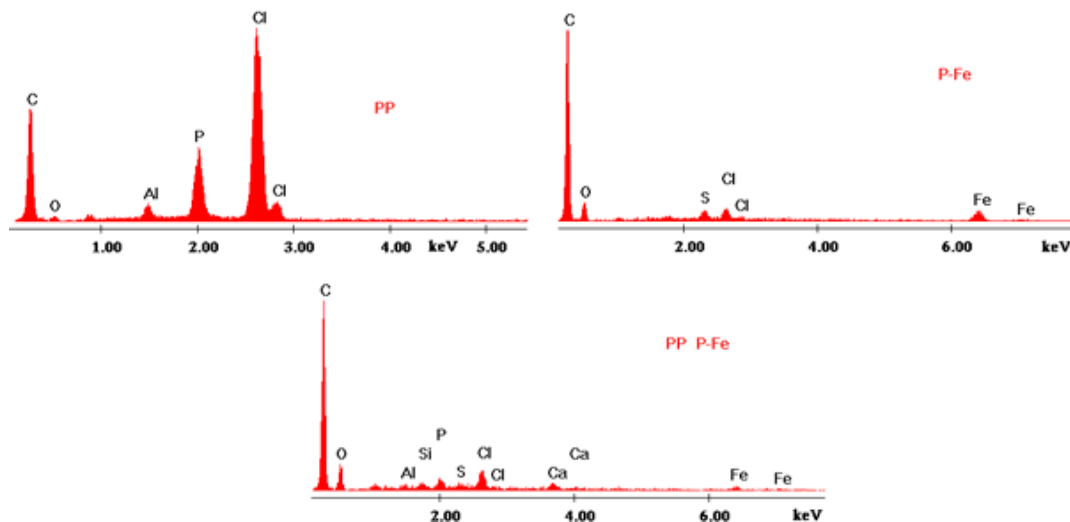
This spectrum was introduced in the main manuscript as Figure 3

9. ^{31}P -NMR of the heterodimer complex compound 3



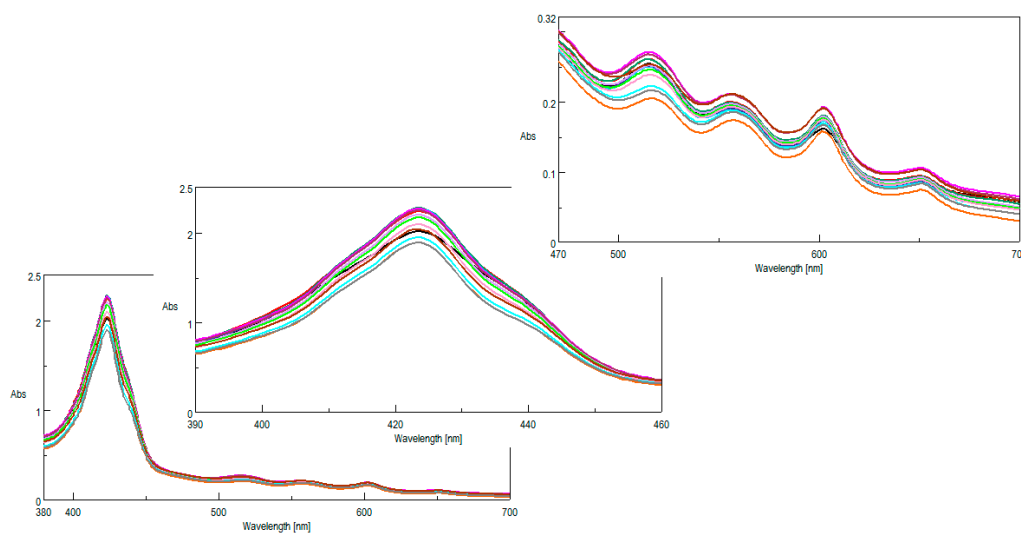
S10. ^{31}P -NMR of the heterodimer complex compound 3

10. EDAX Quantification reveals, in strong agreement with NMR that to a Fe atom one P atom is corresponding.



S11 EDAX Quantification of compound 2, compound 1 and dimer complex compound 3

11. UV-vis experiments between compound **3** and hydrogen peroxide solution



S12 UV-vis experiments between compound **3** and hydrogen peroxide solution. The decrease of the intensity of absorption by increasing the H_2O_2 concentration does not provide sufficient sensitivity.