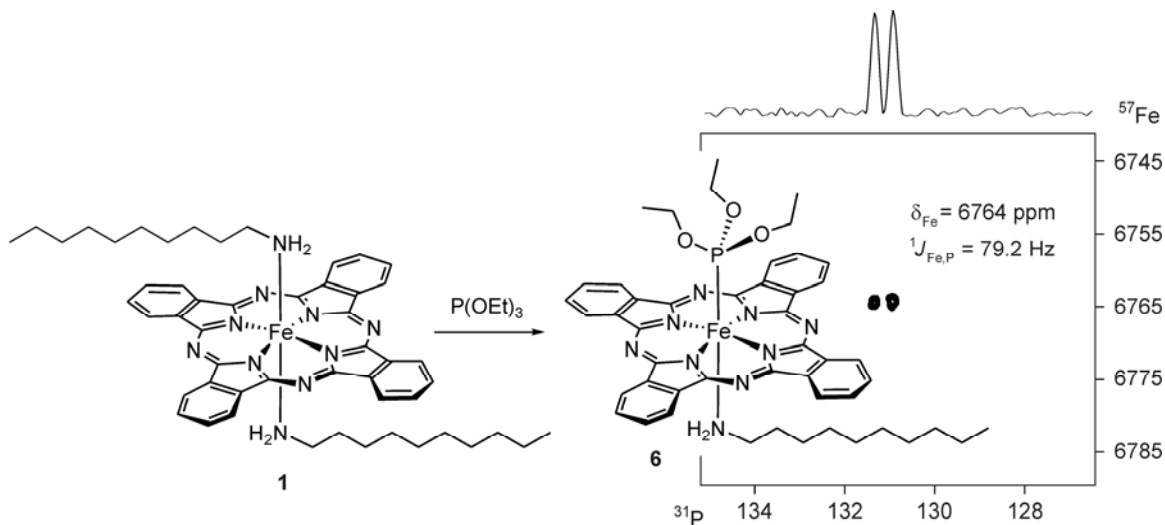


New Mixed Ligand Iron(II) Phthaloyanine Complexes as Chemical Sensors: An Excursion into Multinuclear NMR

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We report herein solution NMR and solid-state studies concerned with the structures of the complexes derived from the reactions of primary amines and phosphites with low spin iron(II) phthalocyanine (FePc). In THF solution at room temperature quantitative conversions to the bis(amine) **2-5**, or mixed ligand amine-phosphite iron complexes **6-7** are obtained (Scheme).¹ The ⁵⁷Fe chemical shifts of the phosphorous-containing phthalocyanine complexes **6-7** will be given based on indirect detection of the metal by correlation shift spectroscopy. ¹H and ³¹P Pulse Gradient Spin Echo NMR diffusion measurements help on giving a closer view about the aggregation state of all these species which are proved to be mononuclear in all the cases, with no charge-induced aggregation. Photometric studies have been also applied to NO₂- and CO-sensing films containing these new complexes in order to establish their use as optical sensors.² Together with that, correlations between nitrogen chemical shifts versus sensing activity towards CO and NO₂ will be also provided.³



- [1] Fernández, I.; Pregosin, P. S.; Albinati, A., Rizzato, S., Spichiger-Keller, U. E.; Nezel, T.; Fernández-Sánchez, J. F. *Helv. Chim. Acta* **2006**, *89*, 1485.
[2] Fernández-Sánchez, J. F.; Fernández, I.; Steiger, R.; Beer, R.; Cannas, R. Spichiger-Keller, U.E. *Adv. Funct. Mat.* **2007**, *17*, 1188.
[3] Fernández, I.; Oña-Burgos, P.; Valero-Navarro, A.; Fernández-Sánchez, J. F.; Segura-Carretero, A.; Fernandez-Gutierrez, A., *manuscript in preparation*.