

Supporting Information

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New Redox-active Fe(II) Acetylide Complex bearing a (2-pyridyl)aldimine Site. Synthesis and
Complexation to Cu(I)

Including:

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| 1. Cyclic voltammograms of 2, 8 and 9[PF₆] | p. S2 |
| 2. Cyclic voltammograms of [Cu(N-Ph,2-Py-aldimine)₂][PF₆] | p. S3 |
| 3. VT-³¹P{¹H} NMR Spectra of 9[PF₆] | p. S5 |
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| 5. ESR Spectra of 8[PF₆] and 9[PF₆]₃ | p. S7 |

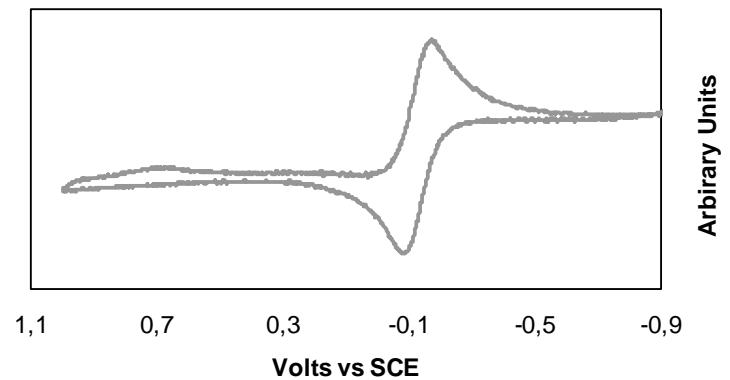
1. Cyclic voltammogramms of **2, **8** and **9**[PF₆]**

Figure S1a. Cyclic voltammogramm of **2** in dichloromethane (see Table 4 for conditions).

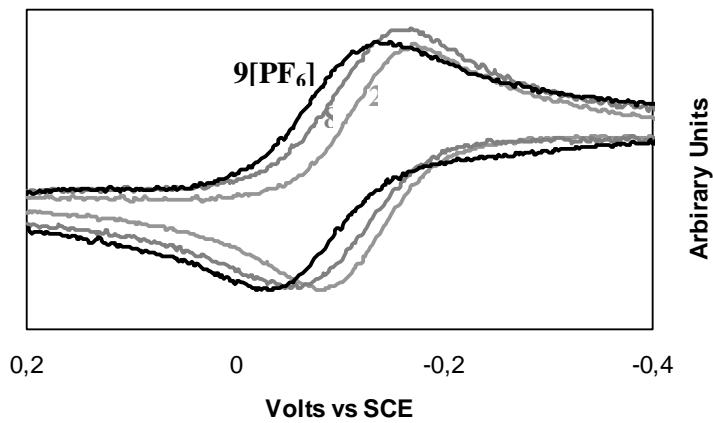


Figure S1b. Cyclic voltammogramms of **2**, **8** and **9**[PF₆] in dichloromethane showing the potential shift of the Fe(II)/Fe(III) redox potential occurring upon complexation of **2** (see Table 4 for conditions).

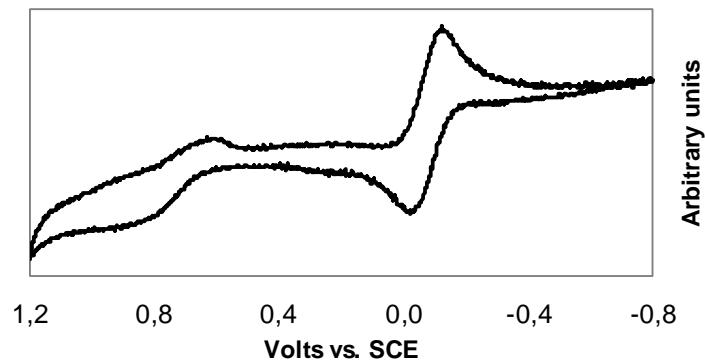


Figure S1c. Cyclic voltammogramm of **8** in dichloromethane (see Table 4 for conditions).

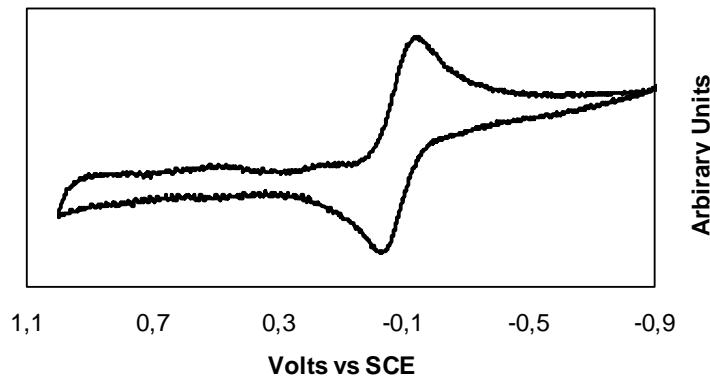


Figure S1d. Cyclic voltammogramm of **9**[PF₆] in dichloromethane (see Table 4 for conditions).

2. Cyclic voltammograms of [Cu(*N*-Ph,2-Py-aldimine)₂][PF₆]

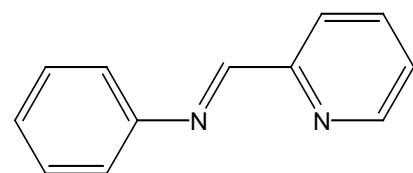


Chart S1. The *N*-Ph,2-Py-aldimine ligand.

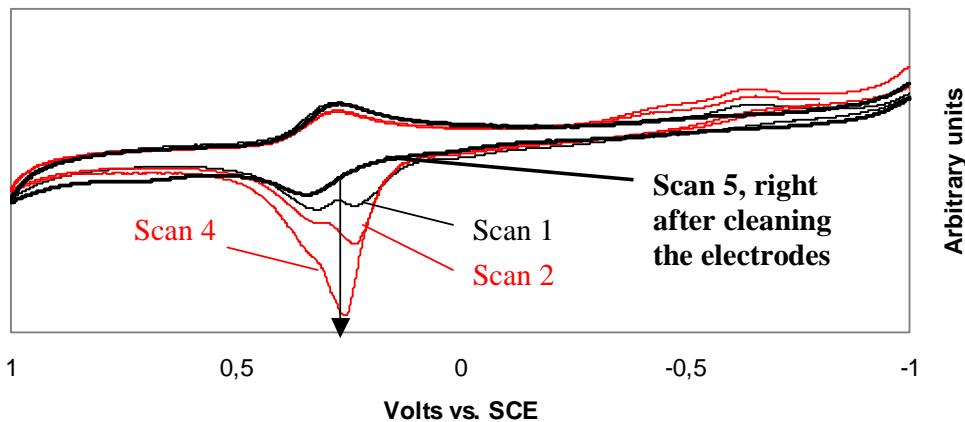


Figure S2a. Cyclic voltammogramm of $[\text{Cu}(\text{N-Ph,2-Py-aldimine})_2]\text{[PF}_6]$ in methanol (same conditions as for 2).

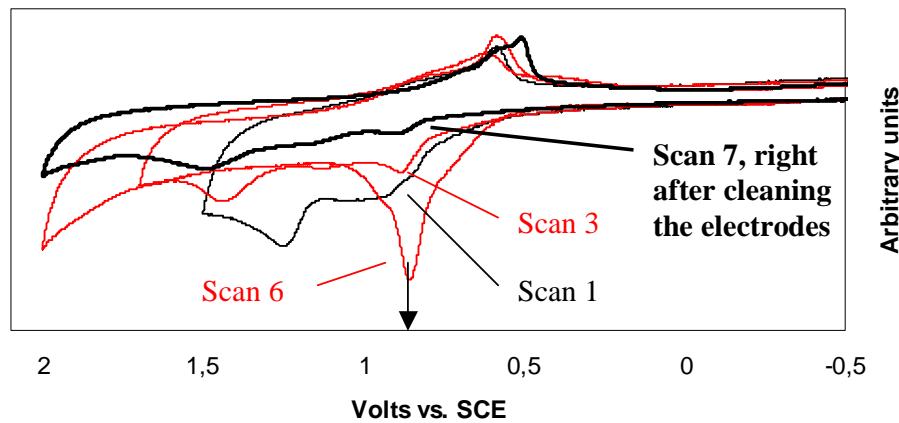


Figure S2b. Cyclic voltammogramm of $[\text{Cu}(\text{N-Ph,2-Py-aldimine})_2]\text{[PF}_6]$ in dichloromethane (same conditions as for 2).

3. VT- $^{31}\text{P}\{\text{H}\}$ NMR Spectra of **9**[PF₆]

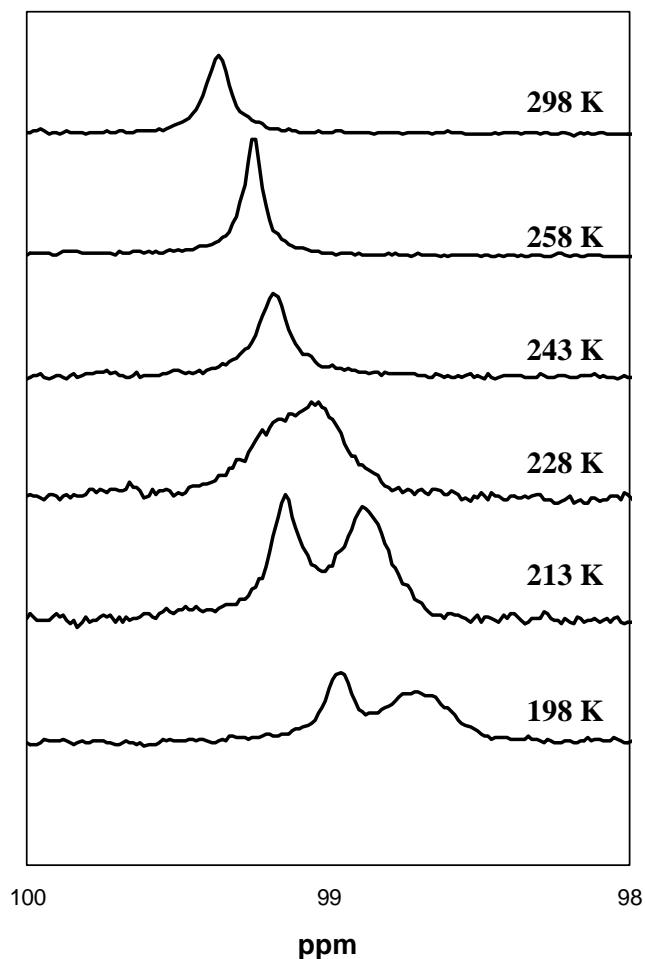


Figure S3. $^{31}\text{P}\{\text{H}\}$ NMR Spectra of **9**[PF₆] at various temperatures in CD₂Cl₂.

Based on the spectral data and considering that the coalescence temperature is reached at T_c = 228 ± 10 K, with Δv = 48.5 Hz, we can derive an activation enthalpy of 46.± 2 kJmol⁻¹ for the process, according to the well known equation (1),¹ derived from the Eyring expression :

$$\Delta G^\ddagger = 19,1 \cdot 10^{-3} \cdot T_c (9.97 + \log T_c - \log \Delta v) \quad (1)$$

¹ Hesse, M.; Maier, M.; Zeeh, B. *Méthodes spectroscopiques pour la chimie organique*; Masson: Paris, 1997, pp. 119-121.

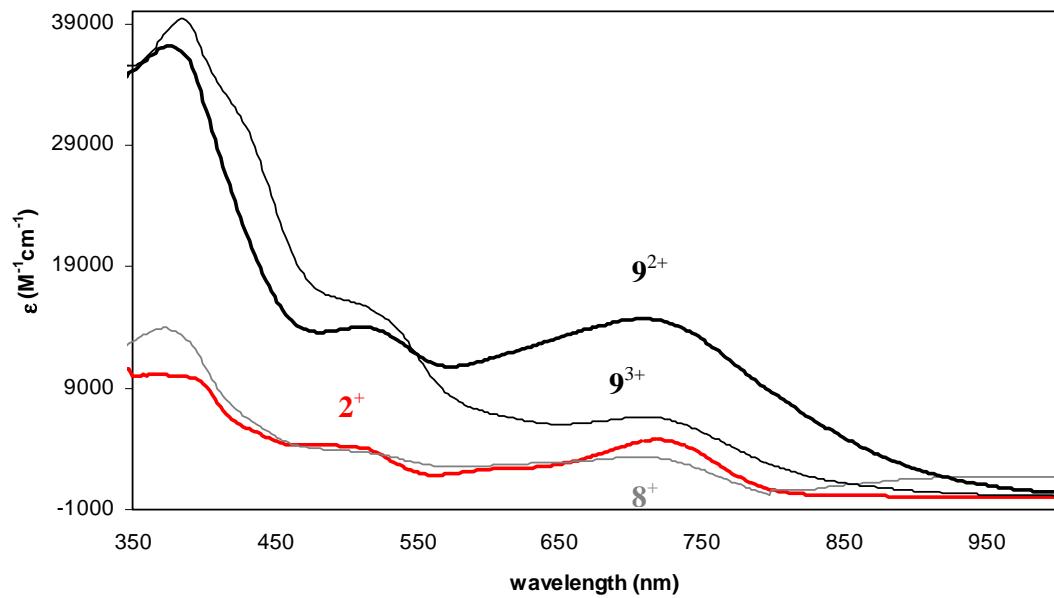
4. UV-vis Spectra of 2[PF₆], 7[PF₆], 9[PF₆] and 9[PF₆]₃

Figure S4. UV-vis spectra of **2[PF₆]**, **7[PF₆]**, **9[PF₆]** and **9[PF₆]₃** in dichloromethane

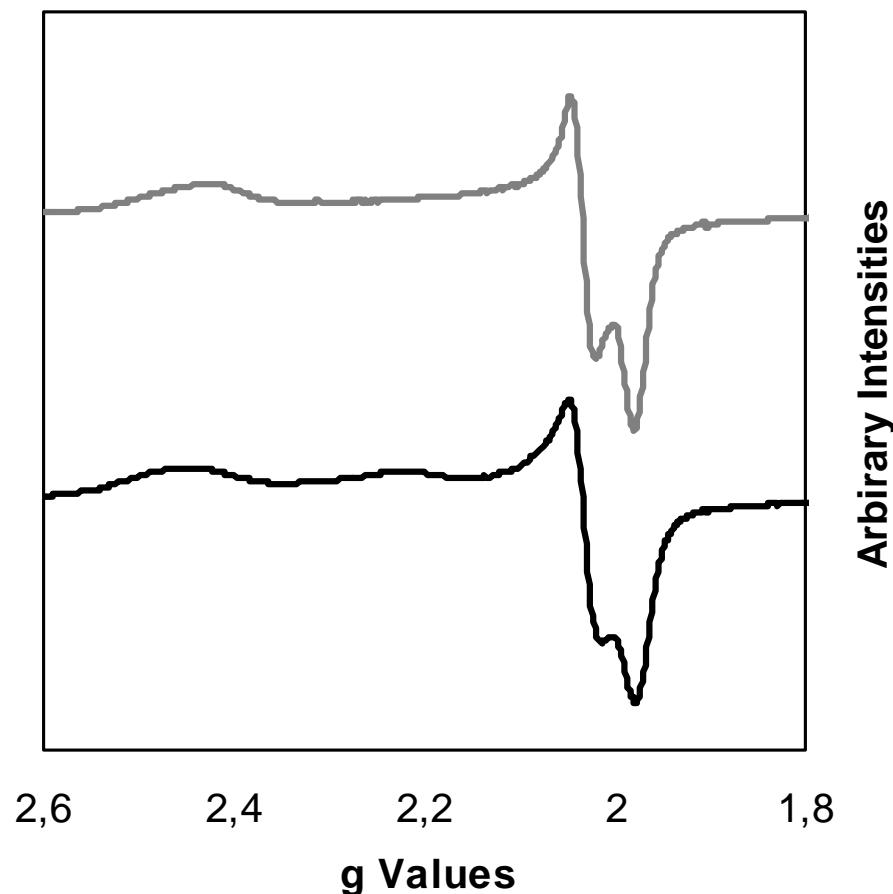
5. ESR Spectra of $\mathbf{8}[\text{PF}_6]$ and $\mathbf{9}[\text{PF}_6]_3$ 

Figure S5a. ESR spectra of $\mathbf{2}[\text{PF}_6]$ (grey trace) and $\mathbf{8}[\text{PF}_6]_3$ (black trace) in 1,2-DCE/DCM glasses at 70 K and 80 K, respectively.

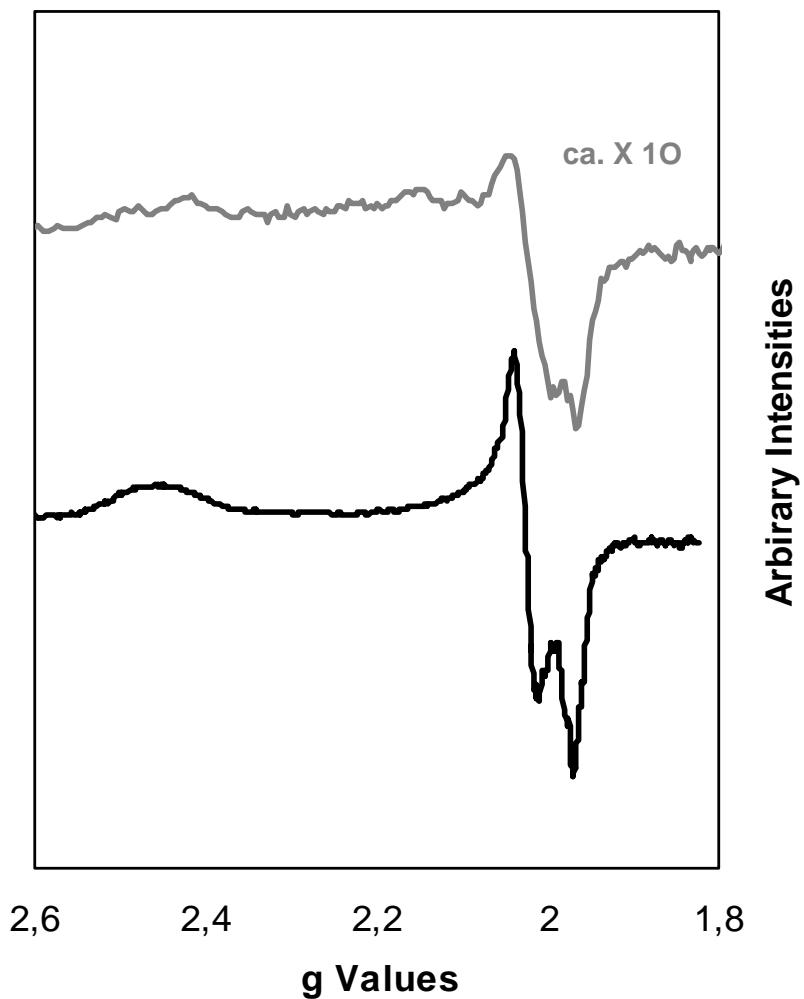


Figure S5b. ESR spectra of **9**[PF₆]₃ (grey trace) and **9**[PF₆]₂ (black trace) in 1,2-DCE/DCM glasses at 70 K and 80 K, respectively.