

Séminaire - Franck Dolhem

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Titre: "Revival of Electroactive Organic Materials as Electrodes for Batteries"

Résumé:

After years of silence, redox-active organic compounds are re-emerging in the energy storage community bringing with them interesting opportunities such as design flexibility, lightweight, low cost and/or restrained environmental burden [1]. In addition, they can potentially integrate a wide variety of electrochemical device architectures operating both in aqueous or non-aqueous electrolytes. Interestingly, the past decade has seen significant progress in the design of new organic compounds and today a myriad of promising electroactive organic materials have been investigated [2-5]. However, several improvements are still needed to further promote insertion organic electrode materials. For instance, only few studies have been reported in the literature regarding the assembly of full Li-ion organic cells [6] while the literature is quite abundant in terms of Li metal-organic batteries; the main difficulty being to successfully synthesize robust lithiated cathode materials. We will focus on the efforts developed in the last years by our group toward design (through molecular design) and implementation of high potential (> 3 V vs. Li⁺/Li) lithiated organic cathodes.

- [1] P. Poizot and F. Dolhem, *Energy Environ. Sci.*, 2011, 4, 2003–2019.
- [2] Y. Liang et al., *Adv. Energy Mater.*, 2012, 2, 742–769.
- [3] T. Janoschka et al., *Adv. Mater.*, 2012, 24, 6397–6409.
- [4] Q. Zhao et al., *Ind. Eng. Chem. Res.* 2016, 55, 5795–5804; *Adv. Energy Mater.* 2017, 7, 1601792.
- [5] C. Friebe, *Top Curr Chem (Z)* (2017) 375:19.
- [6] P. Poizot, F. Dolhem, J. Gaubicher, *Curr. Op. Electrochem*, 2018, 9, 68-80