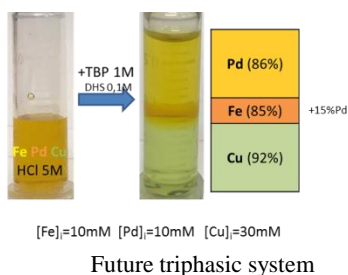
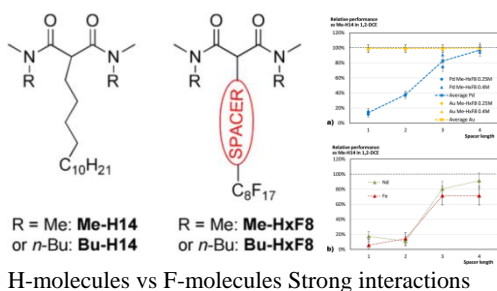
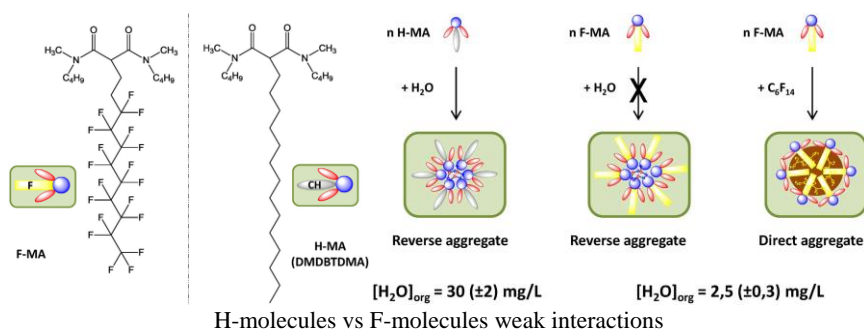


Liquid-Liquid System chemistry: Fluorinated systems and strong-weak interaction correlation

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Better understanding of how a metal ion usually not soluble in an organic phase can be maintained into it by using an extractant is one of the main challenges in the liquid-liquid separation field. One part of this challenge is to elucidate the role of the interactions which can take place at the molecular level, especially the relations between first order interactions (such as chemical bonding or electrostatic interactions) and low energy second order interaction (H bonding, polarisation, dipole...)(ref¹).

The research done in this field is focused on the formulation of separation solvents and the related molecular topology, weak interactions modulation from H-molecules to Fluorinated molecules (ref^{2, 3}) and 3 phase systems (ref^{4, 5})



¹ Damien Bourgeois, Asmae El Maangar and Sandrine Dourdain- "Importance of weak interactions in the formulation of organic phases for efficient liquid/liquid extraction of metals" - *Current Opinion in Colloid & Interface Science*, 2020, 46:36–51

² B. Braibant, X. Le Goff, D. Bourgeois, D. Meyer - "Impact of the Long-Range Electronic Effect of a Fluorous Ponytail on Metal Coordination during Solvent Extraction" - *Chem Phys Chem*, 2017 18, 24, 3583

³ Marie-Claire Dul, Bertrand Braibant, Sandrine Dourdain, Stéphane Pellet-Rostaing, Damien Bourgeois, Daniel Meyer, "Perfluoroalkyl- vs alkyl substituted malonamides: Supramolecular effects and consequences for extraction of metals" *Journal of Fluorine Chemistry* 200 (2017) 59–65

⁴ B. Braibant, D. Bourgeois, D. Meyer - "Three-liquid-phase extraction in metal recovery from complex mixtures" *Separation and Purification Technology* 2018 195, 367

⁵ J. Durain, D. Bourgeois, M. Bertrand, and D. Meyer- "Comprehensive Studies on Third Phase Formation: Application to U(VI)/Th(IV) Mixtures Extracted by TBP in N-dodecane" - *Solvent Extraction and Ion Exchange*, 2019, VOL. 37, NO. 5, 328–346