

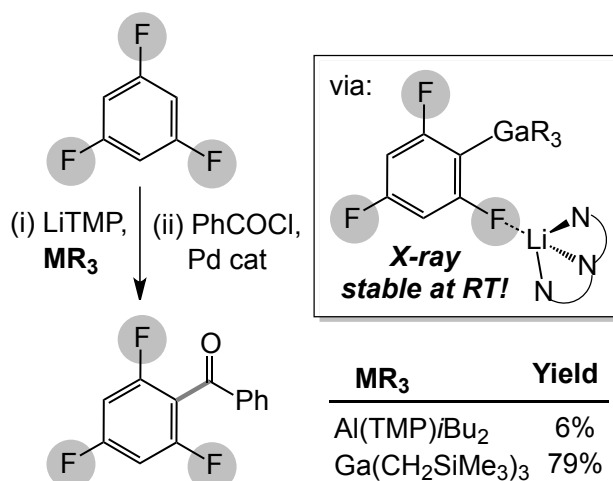
# TOWARDS A PARADIGM SHIFT IN MAIN GROUP POLAR ORGANOMETALLIC CHEMISTRY

Eva Hevia\*

WestCHEM, Department of Pure and Applied Chemistry, University of Strathclyde, Glasgow, G11XL, UK.  
eva.hevia@strath.ac.uk

Organolithium compounds (*e.g.*, alkyls, aryls and amides) have been and remain pivotal to the development of synthetic chemistry.<sup>[1]</sup> Staple reagents in academic laboratories and chemical industries worldwide, their extensive utilization reflects their high reactivity and selectivity (notably in directed *ortho*-metallation). However, in many cases this high reactivity can also compromise their functional group tolerance, imposing the use of severely restrictive protocols (*e.g.*, moisture- and oxygen-free organic solvents, inert atmospheres, extremely low temperatures *etc.*) and frequently the lithiated organic intermediates can be unstable and decompose.

This presentation will explore alternative organometallic strategies to overcome some of these major drawbacks faced by standard organolithium reagents. This includes the use of bimetallic combinations for deprotonative metallation reactions, which operating in tandem enable the trapping of sensitive anions such as metallated diazines<sup>[2]</sup> or fluoroarenes (see Scheme).<sup>[3]</sup> Furthermore, the promising use of non-conventional solvent systems such as Deep Eutectic Solvents (DESs) in organolithium chemistry will also be discussed,<sup>[4]</sup> edging closer towards developing greener and air and moisture compatible methodologies.



## References

- 1) Mongin, F.; Harrison-Marchand, A.; *Chem. Rev.* **2013**, 113, 7563.
- 2) Uzelac, M.; Kennedy, A. R.; Hevia, E.; Mulvey, R. E.; *Angew. Chem. Int. Ed.* **2016**, 55, 1314.
- 3) (a) McLellan, R.; Uzelac, M.; Kennedy, A. R.; Hevia, E.; Mulvey, R. E.; *Angew. Chem. Int. Ed.* **2017**, 56, 9566. (b) Maddock, L. C. H.; Nixon, T.; Kennedy, A. R.; Probert, M. R.; Clegg W.; Hevia, E.; *Angew. Chem. Int. Ed.* **2018**, 57, 187.
- 4) (a) Vidal, C.; Garcia-Alvarez, J.; Hernan-Gomez, A.; Kennedy, A. R.; Hevia, E.; *Angew. Chem. Int. Ed.* **2014**, 53, 5969. (b) Vidal, C.; Garcia-Alvarez, J.; Hernan-Gomez, A.; Kennedy, A. R.; Hevia, E.; *Angew. Chem. Int. Ed.* **2016**, 55, 16145. (c) Rodriguez-Alvarez, M. J.; Garcia-Alvarez, J.; Uzelac, M.; Fairley, M.; O'Hara, C. T.; Hevia, E.; *Chem. Eur. J.* **2018**, 24, 1720.