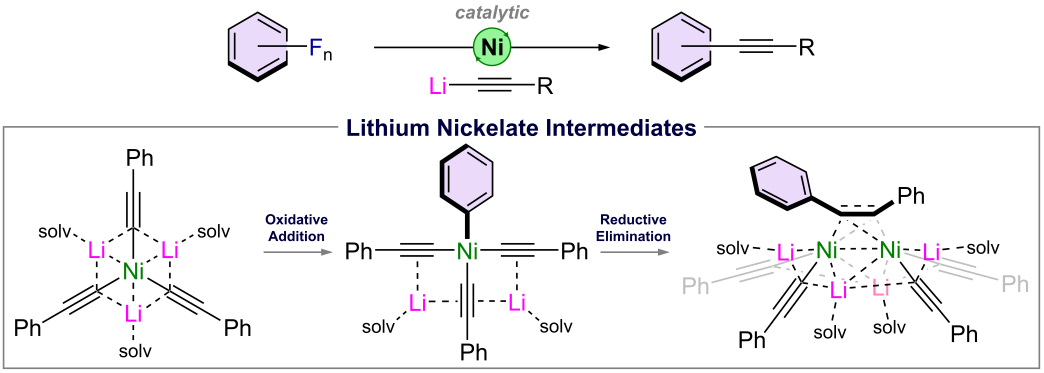
Nickelate-Catalysed Alkynylation of (Poly)Fluoroarenes

A. M. Borys[1], L. Vedani[2], E. Hevia[1]*

[1]Universitat Bern, [2]University of Bern

Nickel catalysis has the unique ability to functionalise inert substrates that are typically out of scope for Pd-catalysed methods. In contrast to traditionally accepted mechanisms, it has been proposed that low-valent nickelates that are derived from Ni(0)-olefin complexes (*i.e.* the pre-catalyst) and polar organometallics (*i.e*. the nucleophilic coupling partner) may be alternative intermediates that facilitate these challenging transformations.

In this context, we have recently provided detailed experimental and theoretical evidence to support the involvement of lithium nickelate intermediates in the Ni-catalysed cross-coupling of aryl ethers with PhLi.[1,2] Using this mechanistic knowledge, this work will reveal how tri-lithium nickelates[3] derived from lithium acetylides can facilitate the alkynylation of fluoro- and polyfluoroarenes.[4] Insights into the reaction mechanism have been gained through a series of stoichiometric, catalytic and kinetic studies.



[1] Andryj M. Borys, Eva Hevia. *Angew. Chem. Int. Ed.,* **2021**, *60*, 24659-24667.

[2] Haosheng Liang, Andryj M. Borys, Eva Hevia, Lionel Perrin, Pierre-Adrien Payard. *In preparation.*

[3] Andryj M. Borys, Lorraine A. Malaspina, Simon Grabowsky, Eva Hevia.*Angew. Chem. Int. Ed.,* **2022**, *61* e202209797.

[4] Andryj M. Borys, Luca Vedani, Eva Hevia. *In preparation.*