

Recent developments in lanthanoid pseudo-Grignard reagent chemistry

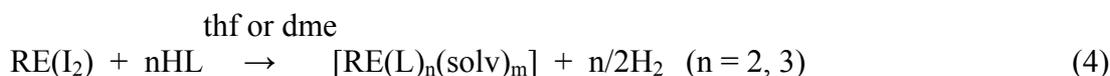
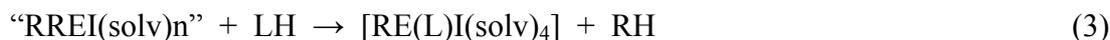
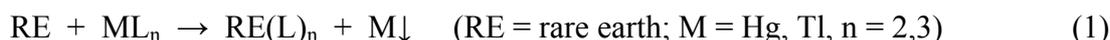
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We have progressed metal based syntheses using rare earth metals considerably over the past several years. Organo-mercury and -thallium reagents have been extremely versatile reagents in redox transmetallation (equation 1) while the mercury reagents have also found great utility in the more convenient redox transmetallation/protolysis reactions (equation 2).[1] We have now extended this rare earth chemistry to the use of less toxic reagents such as RSnMe_3 , [2], BiPh_3 , [3] and most recently using pseudo-Grignard type chemistry [4] (equation 3) and use of I_2 to activate the metal (equation 4).[5] This presentation will involve a discussion of the latter two methods.

In lanthanoid pseudo-Grignard chemistry, we have been able to use these reagents in protolysis reactions to deliver heteroleptic iodo(metal organic)lanthanoid species in good yield, [4] despite previous reports of the mixed oxidation state for PhLnI ($\text{Ln} = \text{Eu}, \text{Yb}$). [5] The species obtained our attempts to crystallise “ $\text{PhYbI}(\text{thf})_n$ ” complexes will be presented.

We have recently shown that bulk lanthanoid metal can be activated by a few % of iodine crystals in the presence of a protic ligand to produce metal-organic compounds (equation 4). In this presentation, the new directions of the project will be discussed along with the most recent exciting results.



[1] G.B. Deacon *et al.*, *J. Organomet. Chem.*, **647**, 50 (2002).

[2] S Beaini, GB Deacon, M Hilder, PC Junk and DR Turner, *Eur. J. Inorg. Chem.*, 3434 (2006).

[3] M.M. Gillett-Kunnath, J.G. MacLellan, C.M. Forsyth, P.C. Andrews, G.B. Deacon and K. Ruhlandt-Senge, *Chem. Commun.*, 4490 (2008).

[4] M Wiecko, GB Deacon and PC Junk, *Chem. Commun.*, **46** 5076 (2010).

[5] D.F. Evans *et al.*, *J. Chem. Soc. D.*, 244 (1970); *J. Chem. Soc. A.*, 1931 (1971)

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