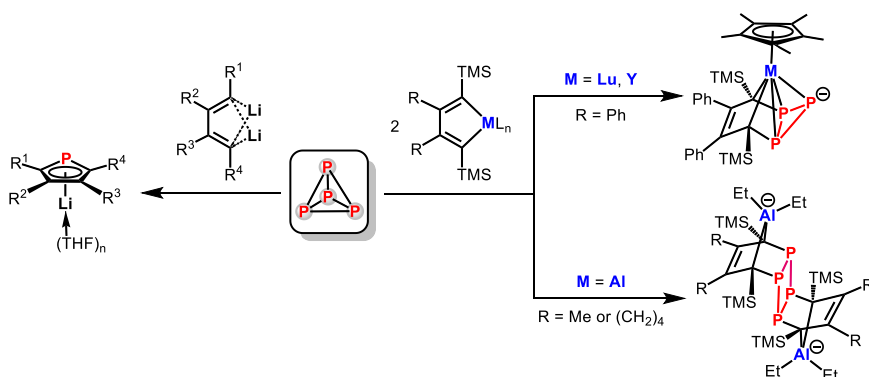


Direct Functionalization of White Phosphorus to Organophosphorus Compounds

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Direct functionalization of white phosphorus (P_4) constructing value-added phosphorus-containing compounds is becoming a hot area because it avoids the use of toxic phosphorus halides and phosphine gas.[1] From the view-point of sustainability and green chemistry, the direct and highly efficient construction of P–C bonds from P_4 and organic or organometallic substrates is an ideal process. Herein, we report (Scheme 1): i) the reaction of 1,4-dilithio-1,3-butadienes with P_4 affording phospholyl lithium quantitatively,[2] ii) the [3+1]-fragmentation reaction of rare-earth metallacyclopentadienes with P_4 affording rare-earth metal cyclo- P_3 complexes and phospholyl lithium,[3] and iii) the reaction of aluminacyclopentadienes with P_4 affording selectively cyclotetraphosphanes.[4]



Scheme 1. Direct Functionalization of P_4 for the Synthesis of Organophosphorus Compounds.

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