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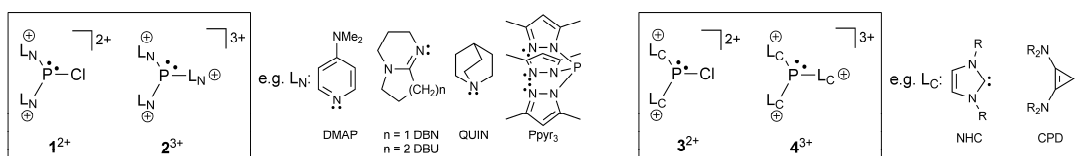
## SynPhos - New Concepts in Synthesis

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Fundamental research allows us to find new, economically and ecologically attractive ways to meet current challenges. The uncertainty of available phosphorus resources is an urgent concern. Unlike oil, which is lost once used, phosphorus can be recovered and used over and over again or at least transformed into other P-compounds of chemical use. The intention of our research is to contribute to the field of synthetic chemistry both, inorganic and organic, by identifying and developing highly-reactive phosphorus reagents that can be potentially regenerated. In particular, we are interested in *Weiss-type compounds*<sup>[1]</sup> which are containing N- ( $1^{2+}$ ,  $2^{3+}$ ) or C-based ( $3^{2+}$ ,  $4^{3+}$ ) ligands (Scheme).<sup>[2,3]</sup>



We are entering new avenues of phosphorus chemistry and address fundamental questions to develop new applications which can also be extended to the heavier group 15 congeners. Using novel and powerful phosphorus reagents, new concepts for more efficient, selective and sustainable synthetic procedures are developed.<sup>[4]</sup> Our research also intends to develop greener and more efficient processes and, whenever possible, to recover the phosphorus after the reaction. Thus, novel phosphorus-based compounds can be used in the recovery of industrial waste by-products such as phosphane oxides and, therefore, have a positive impact on certain chemical industries and the environment.<sup>[5]</sup>

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