Inorganic Chemistry
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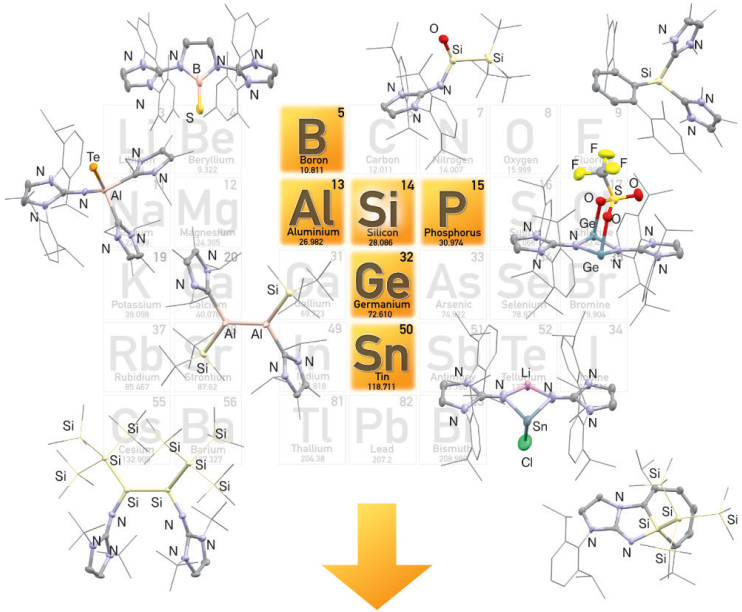
Main Group Chemistry and Catalysis

Main group compounds have shown their ability to mimic transition metals through their ability to activate relatively inert bonds under mild conditions. However, in order to offer a true ‘eco-friendly’ alternative to transition metals their catalytic potential is yet to be fully realized.

Research within the Inoue group focuses on the synthesis, characterization and reactivity of novel low-oxidation state group 13, 14, and 15 complexes. With the overall aim to understand the key processes in enabling catalytic turnover via a combined experimental and theoretical approach. So far we have developed our understanding of the role of ligand design in the stabilization of these low-oxidation species but also their role in enabling oxidative addition of small molecules and substrates.

Challenges still remain in reductive elimination chemistry, but recent discoveries from our group have shown it is possible to use these reactive earth abundant metals in catalysis.



Small Molecule Activation

Homogeneous Catalysis

Material Science