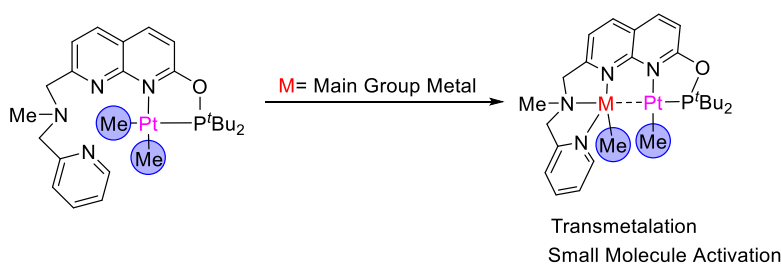


## Heterobimetallic Pt/Main Group Metal Complexes in Metal-Metal Cooperative Bond Activation

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Heterobimetallic complexes which hold two metals in close proximity have been the subject of current interest due to their vital role in small molecule activation and catalysis via metal–metal cooperativity. However, the selective synthesis of heterobimetallic complexes still presents a significant challenge, many research groups rely on the thorough optimization of the ligand design to overcome this issue.<sup>1</sup> Our group focused on the synthesis of unsymmetrical naphthyridine-based binucleating ligands containing distinct binding environments. Such ligand design allowed us to form selective heterobimetallic complexes via stepwise synthesis. As a result, recently we reported the selective formation of Pt/Cu and Pt/Zn heterobimetallic complexes showing close metal-metal interaction and promoting cooperative small molecule activation (H<sub>2</sub>, Si-H, B-H, and C-H).<sup>2</sup> In this work, we report Pt/main group heterobimetallic complexes and their metal-metal cooperative reactivity in the activation of silanes and boranes. We demonstrate how the synergistic interaction plays an important role in metal-metal cooperative small molecule activation, transmetalation, and retrotransmetalation relevant to Stille and Negishi coupling reactions. Metal-Metal interactions were analyzed by QTAIM studies.



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