N,O-Chelated complexes of early transition metals offer unique reactivity in atom economic hydrofunctionalization transformations, such as hydroamination and hydroaminoalkylation. The efficient synthesis of selectively substituted amines and N-heterocycles from broadly available alkyne or alkene starting materials offers new opportunities for assembling small molecules and amine containing polymers. Mechanistic insights have advanced N,O-chelated catalyst development to realize improved substrate scope, enhanced regioselectivity and greater TONs and TOFs.\(^1\) These catalyst efficiencies have been leveraged in the synthesis of amine containing polymers to access new classes of conjugated materials by hydroamination catalysis,\(^2\) and pendant amine containing polymers by hydroaminoalkylation.\(^3\) These new polymers display tunable properties that can be attributed to the incorporation of unprotected amine functionality into these novel materials.

**Figure 1** N,O-Chelated early transition metal complexes for the catalytic synthesis of amine containing small molecules and materials.