Re-MEDIATED DEAROMATIZATION AND PYRIDYL RING-OPENING OF 1,10-PHENANTHROLINE LIGAND

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2,2’-Bipyridine (bipy) and 1,10-phenanthroline (phen) have been widely employed in all areas of coordination chemistry; however, prior to our work, examples of dearomatization of transition metal-coordinated bipy and phen under mild conditions were hardly known.[1] We had previously found that for [Re(CO)₃(bipy)(N-MeIm)]OTf (N-MeIm= N-methylimidazole), the deprotonation of the central CH group of the imidazole ligand triggered the nucleophilic attack onto the C6 atom of bipy, which became dearomatized. Afterwards, two successive methylations of the dearomatized pyridyl moiety promoted the cleavage of a C-N bond, leading to a pyridyl ring-opening product (see Scheme 1 (A)).[2]

Herein we report the extension of this reactivity to more electron rich cis-[Re(CO)₂(N-RIm)(phen)(PMe₃)]OTf (N-RIm= N-alkylimidazole) compounds, in which ring opening of a pyridyl moiety of a phen ligand is achieved for the first time (see Scheme 1 (B)).

Scheme 1. Reactivity of [Re(CO)₂(L)(N-N)(N-MeIm)]OTf (L= CO, PMe₃; N-N= bipy, phen) compounds

References