P48

METALLOPORPHYRIN-INCORPORATED DIPHOSPHINE LIGANDS FOR METAL ION-BINDING

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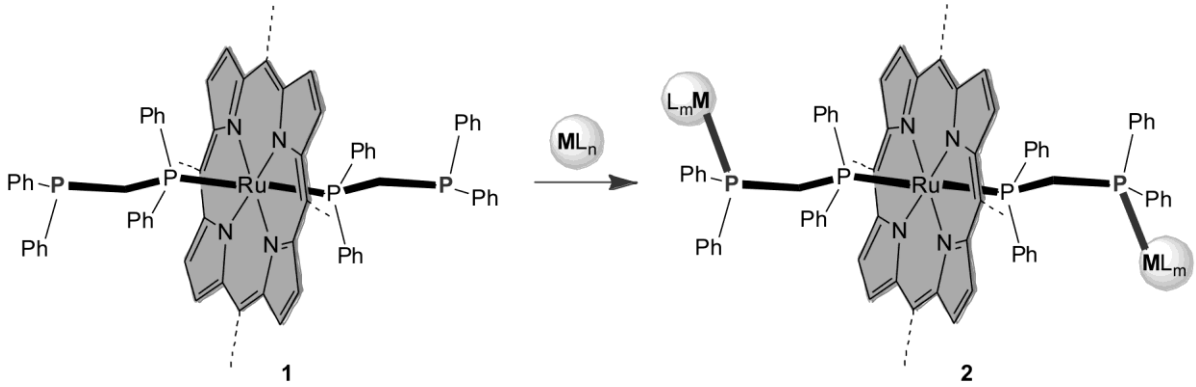
Diphosphine ligands have been widely used in organometallic chemistry and catalysis.[1] By incorporation of functional units such as metallomacrocycles, the resulting functionalized diphosphines could exhibit unusual properties or binding behavior. In this study, we prepared several examples of ruthenium porphyrin phosphine complexes [Ru^{II}(Por)$(dppm)_2$] (**1**; Por = TTP, 4-MeO-TPP, F_{20}-TPP; dppm = bis(diphenylphosphino)methane) by a similar method to that previously reported for their congeners.[2] Reaction of complexes **1** with a number of metal complexes ML_n afforded [$(L_mM)(\mu$-dppm)Ru^{II}(Por)$(\mu$-dppm)(ML_m)] (**2**; M = Ag, Au), which have been characterized by spectroscopic methods including ^{1}H NMR, ^{31}P NMR, and UV/Vis spectroscopy, and also by X-ray crystal structure determination. The formation of complexes **2** from complexes **1** demonstrates the role of complexes **1** as a unique type of diphosphine ligands functionalized with metalloporphyrins (which constitute a large family of metal complexes that resemble heme cores in biological systems and exhibit a wide variety of applications[3]). Studies are underway to explore the properties of this new type of metalloporphyrin-incorporated diphosphine complexes of transition metals.



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