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New Formamidinate Rare Earth Metal Complexes by Pseudo-Grignard Reaction

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Pseudo-Grignard reagents^{1, 2}, “RLnX” (Ln = Eu, Sm and Yb; R = Me, Ph or C₆H₂Me₃-2, 4, 6; X = Br, I), formed by the treatment of organic halides like PhBr or PhI with rare earth metals in Lewis base solvents, can be employed to various organic or inorganic transformations^{3, 4}. We now report the synthesis of new divalent rare earth metal formamidinate complex [Ln(Form)Br(thf)₂]₂ through the relevant Pseudo-Grignard reactions of rare earth metal with bromobenzene in the presence of formamidine (Eq. 1).

A typical reaction using ytterbium metal and bromobenzene or iodobenzene in the presence of 2,4,6-methylformamidine led to the isolation of orange and light orange complexes [Yb(Form)Br(thf)₂]₂, [Yb(Form)I(thf)₂]₂. The product has been structurally characterized including X-ray crystallography (Fig. 1).

Fig. 1. Molecular structure of [Yb(Form)Br(thf)₂]₂

Fig. 2. Molecular structure of [Yb(Form)I(thf)₂]₂

References

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Summary

Primary author(s) : Mr ALI, Safaa (James Cook University)

Co-author(s) : Dr WANG, Jun (James Cook University); Prof. JUNK, Peter (James Cook university)

Presenter(s) : Mr ALI, Safaa (James Cook University)

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