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New Formamidinate Rare Earth Metal Complexes by Pseudo-Grignard Reaction

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Pseudo-Grignard reagents1, 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 transformations3, 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

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