

Insights: Publications

Effects of Glymes on the Distribution of $\text{Mg}(\text{B}_{10}\text{H}_{10})$ and $\text{Mg}(\text{B}_{12}\text{H}_{12})$ from the Thermolysis of $\text{Mg}(\text{BH}_4)_2$

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We examined the effects of concentrations and identities of various glymes, from monoglyme up to tetraglyme, on H_2 release from the thermolysis of $\text{Mg}(\text{BH}_4)_2$ at 160–200 °C for 8 h. ^{11}B NMR analysis shows major products of $\text{Mg}(\text{B}_{10}\text{H}_{10})$ and $\text{Mg}(\text{B}_{12}\text{H}_{12})$; however, their relative ratio is highly dependent both on the identity and concentration of the glyme to $\text{Mg}(\text{BH}_4)_2$. Selective formation of $\text{Mg}(\text{B}_{10}\text{H}_{10})$ was observed with an equivalent of monoglyme and 0.25 equivalent of tetraglyme. However, thermolysis of $\text{Mg}(\text{BH}_4)_2$ in the presence of stoichiometric or greater equivalent of glymes can lead to unselective formation of $\text{Mg}(\text{B}_{10}\text{H}_{10})$ and $\text{Mg}(\text{B}_{12}\text{H}_{12})$ products or inhibition of H_2 release.

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