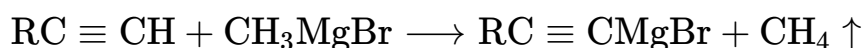


Grignard Reagent Basicity and Reactivity

<https://gemini.google.com/app/7682c9a5757b4341>

Response: **Statement 1:** $\text{RC} \equiv \text{CMgBr}$ can be prepared by the reaction between $\text{RC} \equiv \text{CH}$ and methylmagnesium bromide.

- **Status:** True
- **Explanation:** Terminal alkynes ($\text{RC} \equiv \text{CH}$) possess a weakly acidic sp-hybridized C-H proton ($\text{p}K_{\text{a}} \approx 25$). When treated with a strong base like methylmagnesium bromide (CH_3MgBr), an acid-base transmetallation reaction occurs:



Statement 2: The alkyl group of a Grignard reagent can react as a base.

- **Status:** True
- **Explanation:** The carbon atom bonded to magnesium in a Grignard reagent ($\text{R}^{\delta-}\text{Mg}^{\delta+}\text{X}$) carries a partial negative charge (carbanionic character). This renders the alkyl group strongly basic, allowing it to deprotonate acidic hydrogen sources such as water, alcohols, amines, or terminal alkynes.

Relationship & Conclusion

- Both statements are **True**.
 - **Statement 2 is the correct explanation for Statement 1**, as the reaction in Statement 1 directly relies on the methyl alkyl group of CH_3MgBr acting as a base to abstract the terminal alkynyl proton.
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