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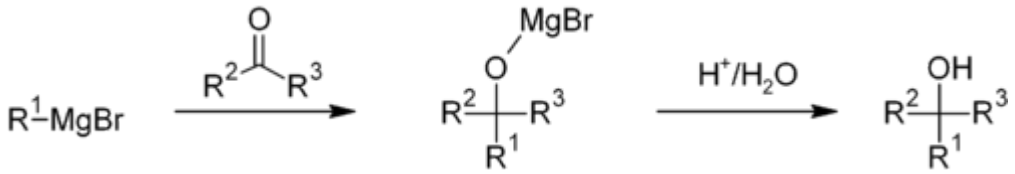
Grignard reaction

The **Grignard reaction** (pronounced /ɡriɲar/) is an organometallic chemical reaction in which alkyl, allyl, vinyl, or aryl-magnesium halides (Grignard reagent) add to a carbonyl group in an aldehyde or ketone.[1][2] This reaction is important for the formation of carbon–carbon bonds.[3][4] The reaction of an organic halide with magnesium is *not* a Grignard reaction, but provides a Grignard reagent.[5]

Grignard reaction	
Named after	Victor Grignard
Reaction type	Coupling reaction
Identifiers	
Organic Chemistry Portal	grignard-reaction
RSC ontology ID	RXNO:0000014

A solution of a carbonyl compound is added to a Grignard reagent. (See gallery)



Grignard reactions and reagents were discovered by and are named after the French chemist François Auguste Victor Grignard (University of Nancy, France), who published it in 1900 and was awarded the 1912 Nobel Prize in Chemistry for this work.[6]

Reaction mechanism

The carbon attached to magnesium functions as a nucleophile, attacking the electrophilic carbon atom that is present within the polar bond of a carbonyl group. The addition of the Grignard reagent to the carbonyl typically proceeds through a six-membered ring transition state.[7]

See also

- Wittig reaction
- Barbier reaction
- Bodroux-Chichibabin aldehyde synthesis
- Fujimoto-Belleau reaction
- Organolithium reagents
- Sakurai reaction
- Indium mediated allylation
- Alkynylation

References

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