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Synthetic Application of Imidoysilanes and Acylsilanes

Ketimines are traditionally synthesized by the condensation with amines and ketones. However, the reactions are sensitive to moisture and required harsh conditions. To overcome these drawbacks, we developed new synthetic pathway using imidoysilanes in presence of the palladium catalyst. Imidoysilanes are uses as an anion equivalent in the reversed-polarity synthesis of N-sulfonyl ketimines. Diaryliodonium salts as an electrophilic coupling partner are used to provide the desired product in good to excellent yields. α -Aminoketones are important and versatile building blocks in medicinal chemistry, natural products and biologically active compounds. Due to their significance, many efforts have been made to synthesize α -aminoketones. In this study, we introduce a metal-free synthetic method utilizing acylsilanes and imines under photo-irradiation. Visible light activates acylsilanes to form the corresponding siloxycarbene intermediates, which subsequently react with imines to produce α -aminoketones. This approach provides an eco-friendly synthesis of α -aminoketones without the use of transition metal catalyst. After extensive optimizations, functionalized α -aminoketones were successfully synthesized in excellent yields.

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