TIFR Centre for Interdisciplinary Sciences
21 Brundavan Colony, Narsingi, Hyderabad 500075

Students' Annual Seminar

Coordination of Imidazolidene Derived N-Hetero Cyclic Carbenes Towards Group-14 & 15 Halides

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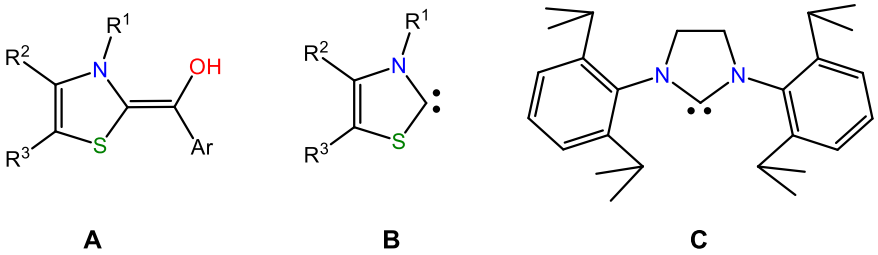
In 1958, to explain the mechanism of benzoin condensation catalyzed by transketolase enzyme, Ronald Breslow proposed the formation of thiazolin-2-ylidene based enaminol as an intermediate which is known as Breslow intermediate **(A)**. In this mechanism, the catalytically active species is thiazolin-2-ylidene **(B)**, a carbene compound, which is formed in situ by deprotonation of the thiazolium salt.[1] Subsequently, there were reports on the isolation of stable carbenes at room temperature.[2] Very recently it is realized that Breslow intermediate formation is possible using imidazolidene based carbene, whereas its backbone saturated version i.e. 4-imidazoline based carbene fails isolation of such intermediates.[3,4] This clearly signifies the dependency of carbene properties on its topology.[5] Here I would like to discuss about the coordination properties of imidazolidene based NHC **(C)** towards Group-14 and Group-15 halides and their subsequent reactivity studies.



Scheme: Chemical Structures of (A), (B) and (C)

References:

[1]. R. Breslow, *J. Am. Chem. Soc.*, **1958**, *80*, 3719–3726.
[2]. a) A. Igau, H. Grutzmacher, A. Baceiredo, G. Bertrand, *J. Am. Chem. Soc.*, **1988**, *110*, 6463–6466; b) A. J. ArduengoIII, R. L. Harlow, M. Kline, *J. Am. Chem. Soc.*, **1991**, *113*, 361–363.
[3]. D. Enders, O. Niemeier, A. Henseler, *Chem. Rev.*, **2007**, *107*, 5606−5655.
[4]. A. Berkessel, V. R. Yatham, S. Elfert, J. M. Neudorfl, *Angew. Chem. Int. Ed.*, **2013**, *52*, 11158–11162.
[5]. D. J. Nelson, S. P. Nolan, *Chem. Soc. Rev.*, **2013**, *42*, 6723-6753.

Tuesday, Dec 15th 2015

4:30 PM (Tea/Coffee at 3:45 PM)

Seminar Hall, TCIS