Tata Institute of Fundamental Research
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Colloquium

Phosphorus to Ynamide Chemistry through Allene/Alkyne Chemistry

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Allenes, alkynes (including propargylic alcohols) and ynamides (e.g., I-IV) have a reactive sp-hybridized carbon centre and are amenable to varied organic transformations. This talk highlights some transformations leading to products of types 1-7 that were synthesized recently.[1-5] Indole derivative 1 is obtained via C-H activation and alkyne insertion using a [Ru]-catalyst,[1b] while compound 2 is obtained from an enynone via [Au]-catalysis.[2] Compounds 3-4 are formed by [Cu]-catalyzed selenium insertion and [Pd]-catalyzed hydrogenation of ynamides, respectively.[3] Products 5 and 6[4] were isolated from the [Cu]-catalyzed reactions of propargyl alcohols while compounds of type 7 are formed via acetoxyallenoates.[5] Complexes 8-9 were isolated from C-H functionalization involving oxidative annulation of 6-anilinopurine or N-quinolin-8-yl-benzamide with alkynes.[1a-b] Enantiomeric forms of allene 10 have been isolated.[6] These results are also briefly discussed in this talk.

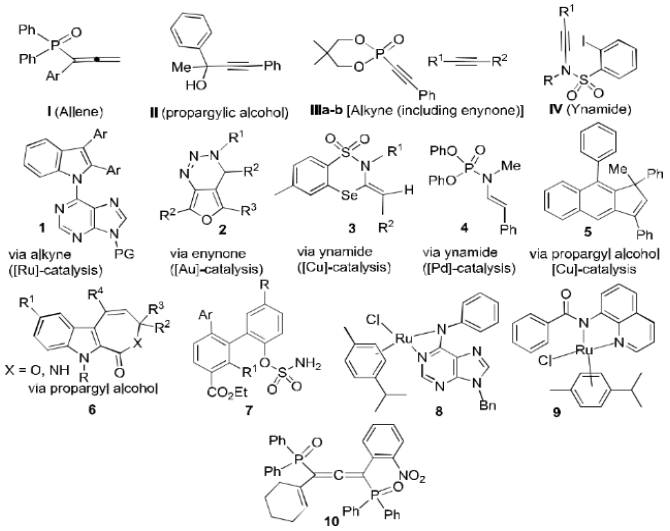

Figure 1. Representative precursors (I-IV), products (1-7; 10) and some isolated intermediates (8-9).

References:

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2. A. L. Siva Kumari, K. C. Kumara Swamy, J. Org. Chem. 2016, 81, 1425.
3. (a) A. Siva Reddy, K. C. Kumara Swamy, Org. Lett. 2015, 17, 2996; b) A. Siva Reddy, K. C. Kumara Swamy, Angew. Chem. Int. Edn. Engl. 2017, 56, 6984.
4. K. Selvaraj, S. Debnath, K. C. Kumara Swamy, Org. Lett. 2019, 21, 5447.
5. S. K. Arupula, A. A. Qureshi, K. C. Kumara Swamy. J. Org. Chem. 2020, 85, 0000.
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Thursday, Mar 19th 2020

4:00 PM (Tea/Coffee at 3:30 PM)

Auditorium, TIFR-H