

# A novel, copper(I)-NHC well-defined catalytic system for the multicomponent synthesis of quaternary propargylamines

Savvas G. Chalkidis and Georgios C. Vougioukalakis\*

*Laboratory of Organic Chemistry, Department of Chemistry, National and Kapodistrian University of Athens, Zografou GR-15771, Greece*

*e-mail: savvas9656@gmail.com*

Propargylamines are useful and versatile substrates for a multitude of organic transformations, as well as promising bioactive molecules. The three component KA<sup>2</sup> (Ketone-Amine-Alkyne) reaction leads to the straightforward synthesis of quaternary propargylamines, from readily available materials, using metal sources as catalysts. Our research group has recently developed sustainable catalytic systems for this reaction, based on low-cost and abundant metal sources (zinc and manganese). Likewise, copper(I)-NHC complexes are appealing candidates, as they show efficient catalytic activity in various organic transformations and are easy to synthesize in large amounts. Herein, we present a novel, sustainable, and user-friendly copper-NHC catalytic protocol for the synthesis of known and new quaternary propargylamine substrates, as well as our ongoing work towards the achievement of the unprecedented asymmetric version of the KA<sup>2</sup> coupling.

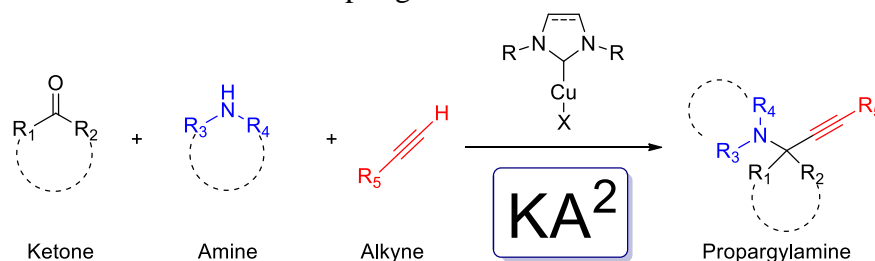


Figure 1: General scheme for the copper(I)-NHC catalyzed KA<sup>2</sup> reaction.

## References:

1. Castagnolo *et al.* *Chem. Rev.* **2017**, *117*, 14091.
2. Zorba, Vougioukalakis, *Coord. Chem. Rev.* **2021**, *42*, 213603.
3. Tzouras, Neofotistos, Vougioukalakis, *ACS Omega* **2019**, *4*, 10279.
4. Adejumo, Tzouras, Zorba, Radanović, Pevec, Grubišić, Mitić, Anđelković, Vougioukalakis, Čobeljić, Turel, *Molecules* **2020**, *25*, 4043.
5. Neofotistos, Tzouras, Pauze, Gómez-Bengoa, Vougioukalakis, G. C. *Adv. Synth. Catal.* **2020**, *362*, 3872.

## Acknowledgment:

The research project was supported by the Hellenic Foundation for Research and Innovation (H.F.R.I.) under the “1<sup>st</sup> Call for H.F.R.I. Research Projects to support Faculty Members & Researchers and the procurement of high-cost research equipment grant” (Project Number: 16).