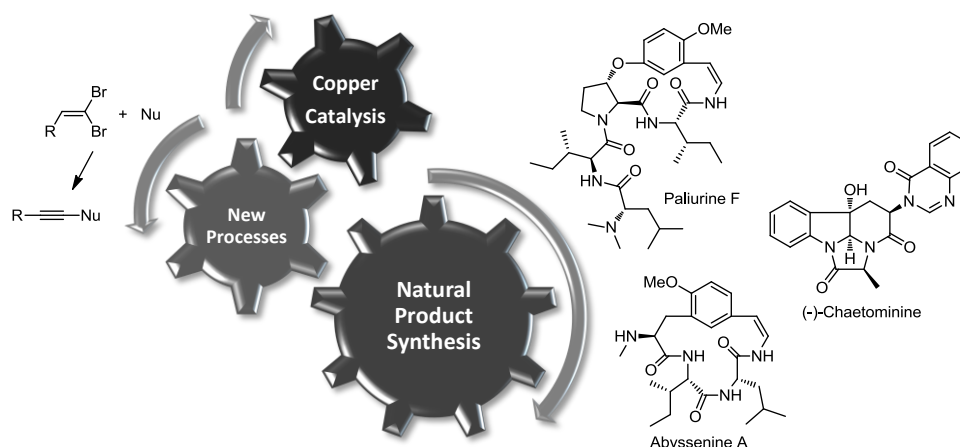


From Natural Product Synthesis to Methodology: Short Stories in Copper Catalysis

GWILHERM EVANO

Laboratoire de Chimie Organique – Université Libre de Bruxelles
Avenue F. D. Roosevelt 50 – CP160/06 – 1050 Brussels – Belgium
gevano@ulb.ac.be

Copper-mediated Ullmann-type transformations have recently evolved as useful and valuable synthetic tools in organic synthesis.¹ If newly developed catalytic systems are readily available, inexpensive, and tolerate most functional groups, they also provide new opportunities in natural product synthesis since they allow original and efficient retrosynthetic disconnections. They are also especially convenient for the development of straightforward cyclization and macrocyclization procedures as shown with our recent total syntheses of alkaloids such as paliurine F² or chaetominine.^{3,4}



In addition to the challenges provided by these syntheses, problems we met *en route* to these natural products provided unique opportunities for methodology development using copper catalysis, especially in the chemistry of heteroatom-substituted alkynes and alkenes.⁵

¹ Reviews: a) Ley, S. V.; Thomas, A. W. *Angew. Chem. Int. Ed.* **2003**, *42*, 5400. b) Evano, G.; Blanchard, N.; Toumi, M. *Chem. Rev.* **2008**, *108*, 3054.

² Toumi, M.; Couty, F.; Evano, G. *Angew. Chem. Int. Ed.* **2007**, *46*, 572.

³ Toumi, M.; Couty, F.; Marrot, J.; Evano, G. *Org. Lett.* **2008**, *10*, 5027.

⁴ Evano, G.; Toumi, M.; Coste, A. *Chem. Commun.* **2009**, 4166.

⁵ a) Coste, A.; Karthikeyan, G.; Couty, F.; Evano, G. *Angew. Chem. Int. Ed.* **2009**, *48*, 4381. b) Evano, G.; Tadiparthi, K.; Couty, F. *Chem. Comm.* **2011**, *47*, 179. c) Jouvin, K.; Couty, F.; Evano, G. *Org. Lett.* **2010**, *12*, 3272. d) Laouiti, A.; Rammah, M. M.; Rammah, M. B.; Marrot, J.; Couty, F.; Evano, G. *Org. Lett.* **2012**, *14*, 6. e) Jouvin, K.; Bayle, A.; Legrand, F.; Evano, G. *Org. Lett.* **2012**, *14*, 1652. f) Jouvin, K.; Heimburger, J.; Evano, G. *Chem. Sci.* **2012**, *3*, 756.