

ENABLING DEVELOPMENTS FOR EFFICIENT AND APPLIED ORGANOCATALYSIS

A. Carlone*^a

^a *Department of Physical and Chemical Sciences, Università degli Studi dell'Aquila, via Vetoio, 67100 L'Aquila - Italy*

* e-mail: armando.carlone@univaq.it

Asymmetric organocatalysis is a powerful technology platform; its practical utility is testified by its screening and application in industrial processes for high-value compounds.¹

Our group is active, among other things, in the context of a long-term programme directed at the identification and development of suitable methodologies for efficient catalysis applicable to industry; organocatalysts performing more efficiently when an external stimulus is applied,² and insights into parameters affecting the performance of immobilised organocatalysts³ are examples of recent contributions. Herein, we present our efforts towards the preparation of γ -amino acids both at the industrial⁴ and academic⁵ level. In particular, R&D was devoted to an IP-free and safe process that would meet cost-requirements for generic drugs.



Brief CV



Armando was born in 1979 in Campobasso, Italy. In 2003, he graduated in [industrial chemistry](#) at the Università di Bologna – Alma Mater Studiorum (Italy). Following a fellowship in 2004, he pursued a PhD in chemistry at the Università di Bologna – Alma Mater Studiorum in asymmetric organocatalysis, under the supervision of [Prof. Paolo Melchiorre](#) and the direction of Prof. Giuseppe Bartoli. In 2006, he spent a 9-month stay working with [Prof. Karl Anker Jørgensen](#) at the “Center for Catalysis”, Århus University (Denmark).

In 2008, he moved to Edinburgh (UK) to join [Prof. Dave Leigh](#) as a postdoc and, in 2009, he won a Marie Curie Intra European fellowship (SupramolOrganocat) to work in the same group on a project at the interface of organocatalysis, supramolecular chemistry, and molecular motors. In 2011, he then joined pharma industry with [Dr. Reddy's](#) (Cambridge, UK), developing new, innovative and cost-efficient processes for APIs, using cutting-edge chemistry, ranging from biocatalysis to chemocatalysis, from organocatalysis to flow chemistry. At Dr. Reddy's, he was also responsible for external collaborations for the UK Cambridge site.

During his career, Armando was responsible for international relationships and board member of [ADI – Association of PhD candidates and holders of Italy](#) (2006-2008), board member of [EURODOC](#) – European Council of doctoral candidates and young researchers (2007-2008), member of the [Society of Chemical Industry](#) Young Chemists' Panel (2012-2016), Cambridge [Pint of Science](#) coordinator (2014-2016), and was also lead scientist at [Dovetailed](#) (2016).

Armando eventually returned to academia and to Italy when he was appointed associate professor in organic chemistry at the [Università degli Studi dell'Aquila](#) on 1st September 2017.

Currently Editorial Board Member of [Tetrahedron Green Chem](#) and [Catalysts](#).

[1] a) A. Carlone, L. Bernardi, *Physical Sciences Reviews*, **2019**, 4, 8, 20180097; b) A. Carlone, L. Bernardi, in *Organocatalysis – Stereoselective Reactions and Applications in Organic Synthesis* (Ed.: M. Benaglia), De Gruyter, Berlin, Boston, 2021, 401-434; c) L. Bernardi, A. Carlone, F. Fini, in *Methodologies in Amine Synthesis* (Eds.: A. Ricci, L. Bernardi), Wiley-VCH, Weinheim, **2021**, 187–242.

[2] a) A. Sinibaldi, F. Della Penna, M. Ponzetti, F. Fini, S. Marchesan, A. Baschieri, F. Pescioli, A. Carlone, *Eur. J. Org. Chem.*, **2021**, 39, 5403-5406.

[3] a) G. Di Carmine, L. S. M. Forster, S. Wang, C. Parlett, A. Carlone, C. D'Agostino, *React. Chem. Eng.*, **2022**, *7*, 269-274; b) G. Di Carmine, F. Pescioli, S. Wang, A. Sinibaldi, G. Giorgianni, C. M. A. Parlett, A. Carlone, C. D'Agostino, *ChemCatChem.*, **2022**, *14*, e202200405.

[4] A. Carlone, C. J. Copley, L. Bernardi, P. McCormack, T. Warr, S. Oruganti, *Org. Process Res. Dev.*, **2021**, *25*, 12, 2795–2805.

[5] a) G. Giorgianni, V. Nori, A. Baschieri, L. Palombi, A. Carlone, *Catalysts*, **2020**, *10*, 1296; b) V. Nori, A. Sinibaldi, G. Giorgianni, F. Pescioli, F. Di Donato, E. Cocco, A. Biancolillo, A. Landa, A. Carlone, *Chem. – Eur. J.*, **2022**, *28*, e202104524.