A. M. Echavarren

*The author presented on this page has published more than **25 articles** since 2000 in Angewandte Chemie. His most recent article is published in this issue:* "Hydroacenes Made Easy by Gold(I) Catalysis": R. Dorel, P. R. McGonigal, A. M. Echavarren, *Angew. Chem. Int. Ed.* **2016**, DOI: 10.1002/anie.201604952; *Angew. Chem.* **2016**, DOI: 10.1002/ange.201604952.

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Awards:	**2004** Organic Chemistry Award, Real Sociedad Española de Química (RSEQ; Spanish Royal Society of Chemistry); **2006** Liebig Lectureship, Organic Division, Gesellschaft Deutscher Chemiker (GDCh; German Chemical Society); **2010** Gold Medal and Research Award, RSEQ; **2015** Arthur C. Cope Scholar Award, American Chemical Society
Current research interests:	Organic synthesis and organometallic chemistry: new catalysts, development of new methods, synthesis of natural products and polyarenes
Hobbies:	Mountain trekking, biking, nature photography, and music (opera)

When I was eighteen I wanted to be a chemist.

The principal aspect of my personality is curiosity.

Looking back over my career, I am convinced that I made the right decision to become a chemist.

In a spare hour, I read a good novel and listen to good music.

Young people should study chemistry because not only is it the central science, but it also allows research goals to be reached on a more individual basis and in a much shorter time than for other subjects.

My first experiment was the generation of chlorine by electrolysis in my parents ' kitchen when I was 14 years old.

If I could be any age I would be 50.

My favorite time of day is very early in the morning and, in the summer, sunset.

I admire good writers, musicians, opera singers, and composers.

I advise my students to take their work seriously and enjoy what they do.

My favorite way to spend a holiday is to be in the countryside, on a mountain, or anywhere else with my wife.

The secret of being a successful scientist is to be passionate and work hard every day.

My favorite organic reactions are rearrangements and cycloadditions.

I get advice from only a few friends and, mainly from my wife, my daughters and my son.

The most important thing I learned from my students is to appreciate that talent has many different faces.

My favorite author (fiction) is Philip Roth.

What I appreciate most about my friends is their intelligence and integrity.

My favorite composers are … there are many (including Bach, Mozart, Beethoven, Tchaikovsky, Mahler, and Shostakovich).

My favorite book is *Consilience* by the biologist E. O. Wilson.

The natural talent I would like to be gifted with is to be good at singing.

How is chemistry research different now than at the beginning of your career?

Chemistry research is now different in many respects. Firstly, spectroscopic methods (mostly NMR), X-ray diffraction, as well as chromatographic and analytical tools have entirely changed the practice of chemistry, making it more simple and reproducible. The frontiers among different subdisciplines (organic, organometallic, inorganic, physical) have almost entirely disappeared, thus diluting the local subcultures into a single experimental science. Computational chemistry is also now almost commonplace and is being increasingly used among experimental chemists not only to understand reactivity but also as a prediction tool. Last, but no least, the access to chemical information is almost infinitely faster and much more complete than it was at the beginning of my career.

What is the secret to publishing so many high-quality papers?

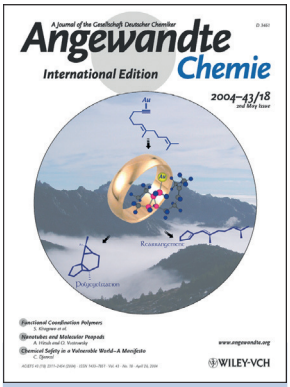
If there is any, it is not so secret: to remain curious about chemical reactivity and to have the best graduate students and postdocs.

How has your research benefited from European collaboration?

It was always very clear that culturally and scientifically, we belong first and foremost to Europe. At an early stage of my career in Madrid, at the Consejo Superior de Investigaciones Científicas (CSIC) and the UAM, two COST programs on the organometallic chemistry of palladium and ruthenium were instrumental in establishing our first European collaborations, which boosted the internationalization of my research group. Later, at the ICIQ, two multidisciplinary European projects on molecular electronics stimulated our activity on the development of new methods and strategies for the synthesis of carbon-rich molecules. Finally, the ERC program has been fundamental at widening our research horizons in gold chemistry and beyond.

My 5 top papers:

1. Intramolecular [4+2] Cycloadditions of 1,3-Enynes or Arylalkynes with Alkenes with Highly Reactive Cationic Phosphine Au(I) Complexes: C. Nieto-Oberhuber, S. López, A. M. Echavarren, *J. Am. Chem. Soc.* **2005**, *127*, 6178.
   A series of very active gold(I) catalysts bearing bulky phosphine ligands were shown to be the most active for the intramolecular reaction of aryl alkynes with alkenes. These new complexes are among the most often used gold(I) catalysts nowadays.
2. "Proton Abstraction Mechanism for the Palladium-Catalyzed Intramolecular Arylation": D. García-Cuadrado, A. A. C. Braga, F. Maseras, A. M. Echavarren, *J. Am. Chem. Soc.* **2006**, *128*, 1066.
   We proposed a new mechanistic paradigm for the palladium-catalyzed arylation of arene C(sp^2)–H bonds based on a proton-abstraction mechanism. This report, together with that published by the late Keith Fagnou in the same year, changed the mechanistic understanding of this and related metal-catalyzed functionalization reactions.
3. "Gold(I)-Catalyzed Intermolecular [2+2] Cycloaddition of Alkynes with Alkenes": V. López-Carrillo, A. M. Echavarren, *J. Am. Chem. Soc.* **2010**, *132*, 9292.
   We uncovered the most fundamental reactivity of alkynes with alkenes in the presence of gold(I) catalysts; this reaction occurs via intermediates that correspond to cyclopropyl gold(I) carbenes. This work later led to the development of new gold(I)-catalyzed intermolecular reactions of alkynes.
4. "Synthesis of (+)-Schisanwilsonene A by Tandem Gold-Catalyzed Cyclization/1,5-Migration/Cyclopropanation": M. Gaydou, R. E. Miller, N. Delpont, J. Ceccon, A. M. Echavarren, *Angew. Chem. Int. Ed.* **2013**, *52*, 6396; *Angew. Chem.* **2013**, *125*, 6524.
   Although we had previously demonstrated the power of gold(I) catalysis in the context of the total syntheses of orientalol and the englerins, we showed in this paper that gold(I) could orchestrate the most complex transformation that had been applied so far in total synthesis. This reaction proceeded through a cascade process that involved a cyclization followed by an intramolecular rearrangement and an intermolecular cyclopropanation. This synthetic work also clarified the mechanisms of migration of propargylic carboxylates in the presence of gold(I).
5. "Gold(I) Carbenes by Retro-Buchner Reaction: Generation and Fate": Y. Wang, P. R. McGonigal, B. Herlé, M. Besora, A. M. Echavarren, *J. Am. Chem. Soc.* **2014**, *136*, 801.
   We discovered that gold(I) promotes the decarbenation (retro-Buchner) of cycloheptatrienes to generate gold(I) carbenes, which react with alkenes or arenes to give cyclopropanes, indenes, or fluorenes. This gold(I)-catalyzed retro-Buchner reaction proceeds by the stepwise electrophilic cleavage of two C–C bonds of norcaradienes, which are in tautomeric equilibrium with cycloheptatrienes, through a shallow potential energy surface. This transformation allows the generation of highly reactive gold(I) carbenes from readily available substrates as a safe alternative to explosive diazo compounds.



The work of A. Echavarren has been featured on the cover of Angewandte Chemie:
"Cationic Gold(I) Complexes: Highly Alkynophylic Catalysts for the *exo*- and *endo*-Cyclization of Enynes": C. Nieto-Oberhuber, M. P. Muñoz, E. Buñuel, C. Nevado, D. J. Cárdenas, A. M. Echavarren, *Angew. Chem. Int. Ed.* **2004**, *43*, 2402; *Angew. Chem.* **2004**, *116*, 2456.

International Edition: DOI: 10.1002/anie.201606837
German Edition: DOI: 10.1002/ange.201606837