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Atom and step economy in synthetic organic chemistry

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One important task concerning any chemical process has to do with the so-called atomic efficiency (AE), which can modify considerably the concept of yield corresponding to a chemical reaction: even working with a high chemical yield a reaction can be not efficient when the main part of the reactants structure is not included in the final product. Two interesting processes will be the subject of this presentation: (a) The hydrogen auto transfer reaction, in which an alcohol is used as electrophilic component, for instance, in the alkylation of a carbonyl compound, water being the only byproduct in the process, that is, therefore, of great value from an atom efficiency point of view; and (b) the multicomponent reaction, such as the aza-Sakurai reaction, or the diastereo selective allylation of imines, of considerable interest from a step efficiency point of view.

Biography

Miguel Yus has completed his PhD in 1973 at the University of Saragossa (Spain) and Postdoctoral studies from the Max Planck Institute in Mülheim Ruhr (Germany). After returning to the University of Oviedo (Spain) he became Associate Professor in 1978 and full Professor in 1987 at the same University. In 1988 he moved to his current position at the University of Alicante (Spain). He has been invited professor at the ETH Zürich, and the universities of Oxford, Harvard, Uppsala, Tucson, Okayama, Paris, Strasbourg, Bologna, Sassari, Tokyo, and Kyoto. He is coauthor of more than 500 papers and 5 patents.

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