Preface

The first Special Topic issue devoted to green chemistry was published in *Pure and Applied Chemistry* in July 2000 [*Pure Appl. Chem.* **72**, 1207–1403 (2000)]. Since then, three collections of works have been published, arising from the recently launched IUPAC series of International Conferences on Green Chemistry:

- 1st International Conference on Green Chemistry (ICGC-1), Dresden, Germany, 10–15 September 2006: *Pure Appl. Chem.* **79**, 1833–2100 (2007)
- 2nd International Conference on Green Chemistry (ICGC-2), Moscow, Russia, 14–20 September 2008: *Pure Appl. Chem.* **81**, 1961–2129 (2009)
- 3rd International Conference on Green Chemistry (ICGC-3), Ottawa, Canada, 15–18 August 2010: *Pure Appl. Chem.* **83**, 1343–1406 (2011)

This Special Topic issue forms part of the series on green chemistry, and is an outcome of IUPAC Project No. 2008-016-1-300: "Chlorine-free Synthesis for Green Chemistry" previously announced in *Chemistry International*, May–June, p. 22 (2011).

The IUPAC Subcommittee on Green Chemistry was founded in July 2001 and has selected the following definition for green chemistry [1]: "The invention, design and application of chemical products and processes to reduce or to eliminate the use and generation of hazardous substances" [2].

Much controversy persists about the appropriate terminology to describe this new field of research. Which term should be selected, "green chemistry" or "sustainable chemistry"? Perhaps consensus can be achieved if different purposes and interests of chemists are reconciled. If we are involved in fundamental research devoted to the discovery of new reaction pathways and reagents, "green" is the best word because it defines these intents, thus the term "green chemistry" would be the best name for this field of research. If we are interested in exploitation of a process or a product that must be profitable, then such chemical manufacture must be sustainable by many criteria (price, competition, profit, environment, etc.), and, accordingly, "sustainable chemistry" is the term that best defines this objective.

This Special Topic issue has been designed with the intent to explore the restriction, or preferably prevention, of the use of halogenated compounds, whenever feasible, through the assembly and reporting of already identified information. This intent has been pursued through innovative synthetic pathways using clearly identified production drivers (e.g., energy consumption, environmental impact, economical feasibility, etc.). In past decades, scientific knowledge and feasible technologies were unavailable, but we now have enough expertise to pursue discontinuation of hazardous and toxic reagents. In fact, the replacement of reagents that are toxic, dangerous, and produced by eco-unfriendly processes is still an underdeveloped area of chemistry today.

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1. For a short history of green chemistry, see: P. Tundo, F. Aricò. *Chem. Int.* **29**, 4 (2007).
2. P. Anastas, D. Black, J. Breen, T. Collins, S. Memoli, J. Miyamoto, M. Polyakoff, W. Tumas, P. Tundo. *Pure Appl. Chem.* **72**, 1207 (2000).