

EDITORIAL

The Way Forward with N-Heterocyclic Carbenes



Preeti Vashi
Deputy Editor, *EurJIC*

Since the discovery of the stable N-heterocyclic carbenes (NHCs) in the early 1990s, research on this important class of compounds has boomed. Their structural versatility and functionalisation enables them to display an array of exploitable and tunable properties. Their strong coordination to metal centres, especially to late transition metals, makes NHCs not only suitable as organocatalysts, but also as organometallic catalysts. This has had far-reaching implications for the entire chemistry community.

Although the role of the NHCs in organometallic chemistry is now well established, these compounds continue to inspire researchers to delve further into their vast chemistry. As a leading society journal for Inorganic Chemistry, *EurJIC* aims to serve the needs of its broad-based inorganic chemistry audience. With this in mind, the idea to present a cluster of papers in one issue, which focuses on the exciting developments in this topical field but covers the broadest variety of aspects as possible, was born. Together with Guest Editor Steven Nolan, it is our pleasure to offer you this Cluster Issue, which captures some of the many notable advances in NHC chemistry by many of the key players in the field.

Guest Editor
Steve Nolan

Thirty-five thought-provoking articles are brought to you in this issue, including two Microreviews by Eduardo Peris et al. and Lionel Delaude, and two Short Communications by Hans-Jörg Schanz et al. and Min Shi and co-workers. Every paper has been reviewed by a panel of experts to ensure that you have a selection of papers of the highest quality.

**High peer-reviewed
quality**

The application of these metal-based NHCs as catalysts and precatalysts in cross-couplings, polymerisations, aminations, hydrogenations and hydrosilylations, amongst others, is highlighted in this issue. Their use as precursors for the activation of inert bonds and the use of chiral NHCs in asymmetric catalysis are also featured. A range of metals are employed, from the lanthanides, to ruthenium and rhenium, to rhodium and iridium, to nickel and palladium, and to copper through to gold. Functionalisation of NHCs towards increasing their catalytic potential, examination of catalytic pathways, investigation of structure–activity relationships, all are presented to give you a taste of what the NHCs have to offer. In addition to the preparative and application-based catalysis offered in this issue, there are a number of contributions that emphasise the importance of theoretical investigations on NHCs, be it by the determination of the buried volume of the NHC ligands or by the study of tautomerism in NHC complexes. Moreover, the versatility of NHC complexes is further exemplified by the antimicrobial activity of silver carbene complexes.

**World-wide
authorship**

This issue is a compilation of contributions from all corners of the globe, which makes this Cluster Issue truly universal. We certainly strive to live by *EurJIC*'s motto "Made in Europe for the World". The cover picture of this issue aims to showcase the wide-range scope of the NHCs, and we therefore exhibit a composite cover that encompasses the different aspects of NHC chemistry presented in this issue. Contributors to this cover are Christopher Bielawski, Luigi Cavallo, Cathleen Crudden, Lionel Delaude and Wiley Youngs et al.; with their designs they hope to entice you into the world

of the NHCs. We trust that you will find this issue stimulating, one that helps spark off many great ideas that will continue to enrich the chemical community. As the full potential of the NHCs is yet to be reached, *EurJIC* would like to pave the way forward towards achieving this goal.

I would like to take this opportunity to thank our authors and reviewers for helping us to bring excellent work to the chemical world. A hearty thanks to our Guest Editor Steven Nolan for his insight and invaluable input towards creating a very special Cluster Issue on N-heterocyclic carbenes.

Dr. Preeti Vashi
Deputy Editor, *EurJIC*