

# Preface

The origins of amino carbenes as ligands can be traced back almost a century to the complex first synthesised by Tschugajeff (Chugaev). Interestingly, *N*-heterocyclic carbenes (NHCs) remained a lab curiosity until the mid-1990s. A few years later, this new class of ligands exploded in the literature, so much so that NHCs have become a ubiquitous class of ligands.

During the past decade, NHCs have been coordinated to virtually all transition metals (TM) and studied in numerous catalytic transformations, pushing back the frontiers of catalysis. In this regard, the most salient examples are found in olefin metathesis and cross coupling reactions, and more recently in organocatalysis.

The monograph commences with an introductory overview of NHCs, including a complete description of their steric and electronic properties, that shatters long-standing dogmas such as “phosphine mimicry” and “inexistent pi-acidity”. This sets the stage for catalytic applications that are thoroughly discussed throughout eleven chapters. The penultimate chapter is devoted to decomposition pathways of TM-NHC systems. The closing chapter brings a unique industrial context to this book by describing applications of NHCs in industrial processes, a first of its kind.

In order to provide the reader with a *fresh* perspective on NHCs, the book has been assembled mainly by young emerging researchers, most of whom studied NHCs in undergraduate classes. This is therefore a perspective from a new generation of researchers that never considered NHCs as laboratory curiosities. A complementary perspective is brought by prominent, well-established academic researchers and an industrialist.

Believe it or not, I have been associated with NHCs in one form or another for the past eleven years. I went through it all, from the frustrations of tar-making to the distress of being *scooped* past tar-stage. I have even been told to give it all up. For some reason NHCs keep crossing my path, and I find them so intriguing that I keep coming back to them. This book has been an exciting project and I hope it will trigger activity from novices and provide inspiration to researchers already in the field.

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