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Preface

The classical divisions of chemistry, inorganic, organic, physical and technical chemistry – as they have been established more than a century ago – are seemingly developing into new and more general topics, such as health and nutrition, resources and energy, environment and climate, mobility, etc. However, the classical areas of chemistry still play an important, often even crucial role for the development and promotion of significant topics of modern life, nowadays often called "megatrends", although this is generally not realized by a large part of the population. This special issue of *Coordination Chemistry Reviews* shows how important inorganic chemistry, and inorganic chemicals in particular, are, for shaping both our daily life and the future of mankind. Some developments, currently under examination in research and development departments of industry, or, apparently even more basic in the research labs of universities, may become technologies of the future. It is our present vision, creativity, and efforts that determine their fate.

This issue of *Coordination Chemistry Reviews* consists of contributions to applied or applicable inorganic chemistry. Almost all of them deal with inorganic or organometallic compounds or materials that can be applied as catalysts. Catalysis, originating from the Old Greek word for "activate" and "unleash" is indeed an area with great future potential. Catalysts help to reduce the energy demand of industrial production and save resources by opening new reaction pathways that allow for benign conditions and "green" pathways in the synthesis of both bulk and fine chemicals. Furthermore, catalysts allow the utilization of abundant raw materials that would otherwise be either less useful or more difficult to activate, for example methane and carbon dioxide. The most popular "catalysts" among non-specialists are those operating in automobiles, but both catalysts and new inorganic and organometallic materials, such as metal organic frameworks (MOFs) will certainly play an important role for keeping mankind mobile in the future.

Other "inorganics" of high potential for meeting future needs are room temperature ionic liquids (RTILs), often simply called ionic liquids (IL). They started from humble beginnings not so many years ago. Since then, ILs have become a major research area and found their way into many industrial applications, resulting in hundreds of patents and thousands of scientific publications each year. More than a million ILs have been synthesized so far, many are commercially available and the number of combinations and applications appears to be almost unlimited.

This issue has assembled a number of internationally renowned contributors, providing insights into selected parts of their ongoing research. One may be quite confident that the research fields summarized in the present issue of *Coordination Chemistry Reviews* will unfold even broader industrial applications in the years to come.

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