**Editorial**
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# Editorial Note on Supramolecular Chemistry

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## Editorial

Supramolecular chemistry represents one of the central themes of modern chemical sciences. Crossing traditional boundaries of inorganic, organic and physical chemistry, supramolecular chemistry affords opportunities to create new molecules and materials which have far reaching implications for many and diverse applications. Indeed, the importance of supramolecular chemistry has now formed the basis of two Nobel Prizes, awarded in 1987 and 2016, and is now not only a field in its own right but is also a central concept to almost any area of chemistry. The basis of supramolecular chemistry is the use of non-covalent interactions to create self-assembled structures. A multitude of interactions are available to the supramolecular chemist to control self-assembly. From hydrogen bonds and halogen bonds to π-interactions and coordination bonds; interactions of different strengths and varying degrees of geometrical preferences are available to design and create structures.

The focus of this chapter is the use of coordination bonds to create supramolecular structures, a multi-faceted area. Coordination bonds are popular tools for supramolecular chemistry due to their diversity of strength and geometries. Over the many decades of coordination chemistry, a great depth of knowledge has been developed, the volumes of Comprehensive Coordination Chemistry III are a testament to the breadth of the field, and this knowledge can be applied to supramolecular chemistry and self-assembly. Thus, coordination bonds can be used to create many types of structure from the great variety of multimetallic complexes to polymeric coordination networks, the ever-growing field of metal-organic frameworks and even surface-based self-assembled arrays.

The particular applicability of coordination chemistry to supramolecular chemistry arises due to the tuneability of the strength and kinetics of coordination bond formation which allows variation and identification of specific reaction conditions suited to the particular target. In addition to the adaptability of coordination bonds, transition metal complexes, in particular, offer predictable geometric arrangements, as taught in any undergraduate chemistry degree. Thus, coordination chemistry offers the perfect tools for supramolecular chemists to employ in their endeavors.

The area of metallosupramolecular chemistry is vast and thus, rather than attempting to cover the entire field, we have selected three specific areas which are of current significance. The selected topics demonstrate the versatility of using coordination chemistry to create supramolecular structures with interesting properties, coordination cages, or with fascinating and complex topology, such as knotted molecules. Initially porphyrin-based metallosupramolecular assemblies will be discussed, with particular attention to how an appreciation of coordination chemistry, thermodynamics and kinetics is required to prepare these complex structures.

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