New Inorganic Framework Materials from the Use of Multifunctional Linkers: Synthesis, Structural and Physicochemical Properties

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Crystal engineering is a cross-disciplinary field of research, which mainly deals with the understanding of the relationship between the structural motifs and properties of molecule-based compounds and materials [1]. The choice, and the process of functionalization and modification of organic and inorganic ligands, are exciting toward the preparation of unprecedented metal-organic and metal-inorganic frameworks [2]. As a result of the structural diversity and the versatile characteristics of supramolecular coordination chemistry, an impressive number of compounds have been discovered, many of which possessing attractive properties in the areas of catalysis, molecular magnetism, host-guest chemistry, optics, sensing, to name but a few. To this perspective, we present herein our first results from the employment of some multifunctional organic and inorganic linkers in 3d- and 4f-metal chemistry as a means of preparing new inorganic framework materials with primarily interesting structural and magnetic properties. Our synthetic strategy involves both the modification of organic ligands and the exclusive use of pseudohalides as the linkers for the construction of 2-D and 3-D coordination polymers (**Figure 1**).

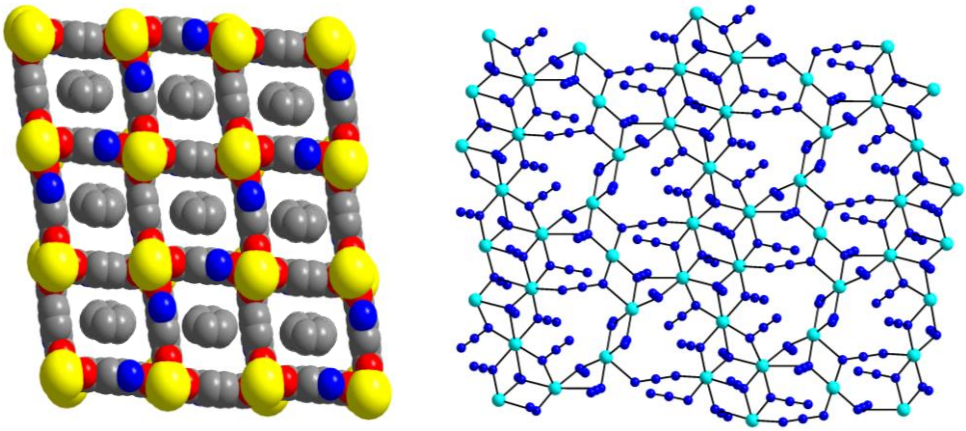

Figure 1. 2-D coordination polymers based on Dy^{III}-dicarboxylate (left) and Cu^{II}-azido (right) units.

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