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Fascinating structures of magnetic materials

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Magnetic materials, in particular molecular magnets, can display remarkable, aesthetically pleasing and elegant structures, although most promising properties have been detected in simple mononuclear compounds [1]. The highly interdisciplinary field of molecular magnetism has been defined by Oliver Kahn as study of "magnetic properties of isolated molecules and/or assemblies of molecules"[2]. Applications of molecular magnets are foreseen in high-density data storage and quantum computing. The latter might be significant not only for on-ground, but also for space applications (e.g. satellite quantum communications).

Crystal structures of molecular magnets, although not fully representative of the targeted applications, play an important role in resolution of magnetostructural correlations [3]. These correlations may be retrieved via special setups, such as high-pressure crystallography [4]. For polynuclear metal complexes (Figure 1) often problems with diffraction data quality and solvent disorder are faced [5].

References:

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