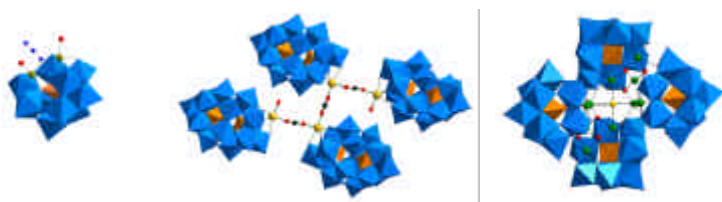


# Polyoxometalates as Precursors of Superclusters and Lattices

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Plurivacant archetypal Keggin and Dawson polyoxoanions are known for a long time for the possibility



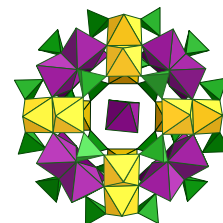
they offer to serve as precursors for complex and sophisticated chemical objects. In particular, introduction in the nucleophilic pocket of these ligands of spin-active fragments permits to design magnetic species. The tuning of the

size and shape of these magnetic clusters, from basic molecular level to supercluster structures, is presented related to supramolecular chemistry. Transition metal ions or lanthanides have been chosen, the resulting compounds pertaining to molecular or solid state domains. Some physicochemical properties such as magnetic interactions and luminescence are reported.

Non archetypal Mo-based polyoxoanions have been designed, the challenge being to get superclusters containing a large number of magnetic centres ( $\text{Co}^{2+}$ ,  $\text{Ni}^{2+}$ ).

The problem of the control of their self-interactions will be presented. These wheels organize in the solid state in different ways depending of the acidobasic conditions of synthesis and the nature of the templating agent. These arrangements are described in terms of weak and covalent interactions.

This approach was extended to phosphatomolybdates. The architectures of the resulting compounds are very different: triangular moieties are connected to form infinite covalent solids containing selectively  $\text{Fe}^{2+}$ ,  $\text{Mn}^{2+}$  or admixture of these ions. Small changes in the chemical composition lead to discrete spherical molecular clusters. The first are interesting for their magnetic behavior, the others for their ability to trap cations.



## References

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