Influence of the Substituent in the Crystal Packing of Copper(II)-malonates

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The design of new molecular materials with interesting magnetic properties can be achieved following different approaches. The introduction of a secondary ligand, the combination of metal centres or the modification of the primary ligand can be some of these strategies. In the context of our magneto-structural research with malonato-bridged copper(II) complexes and in order to obtain novel coordination modes that could enhance the magnetic exchange coupling we have studied the influence of the substituted malonate ligand in copper(II) complexes.

Complexes of the form $[Cu(L^{I})(H_2O)_n]$ and $[Cu(L^{II})_2(H_2O)_n]$ $[Cu(H_2O)_n]$ with L^{I} = malonate, ethylmalonate, methylmalonate and L^{II} = malonate, phenylmalonate, are synthesized. Crystal structures vary from the discrete units of copper(II) malonate compounds [1] to the different conformations of two-dimensional structures of ethylmalonate and methylmalonate. Overall ferromagnetic exchange coupling is found in all of these compounds.

Subtle changes in the nature of the substituent can modify the crystal packing and hence the magnetic properties present in these compounds.

[1] Ruiz-Pérez C., Sanchiz J., Hernández-Molina M., Lloret F., Julve M., *Inorg. Chem.,* 2000, **39**, 1363.

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