

**FULL SELF-ASSEMBLY OF SERENDIPITOUS OCTANUCLEAR Cu(II)
AGGREGATES OF RATIONAL LIGAND-DIRECTED TRIANGULAR COPPER(II)
CLUSTERS**

*Jorge Pasán^a, Joaquín Sanchiz^b, Catalina Ruiz-Pérez^a, José Palenzuela^c, Francesc Lloret^d
and Miguel Julve^d*

^a *Laboratorio de Rayos X y Materiales Moleculares, Departamento de Física Fundamental II, Universidad de La Laguna, Tenerife, Spain*

^b *Laboratorio de Rayos X y Materiales Moleculares, Departamento de Química Inorgánica, Universidad de La Laguna, 38204 La Laguna, Tenerife, Spain*

^c *Departamento de Química Orgánica, Universidad de La Laguna, 38204, La Laguna, Tenerife, Spain.*

^d *Departament de Química Inorgànica/Institut de Ciència Molecular, Facultat de Química, Universitat de València, Avda. Dr. Moliner 50, 46100 Burjassot, València, Spain*

jpasang@ull.es

Polynuclear coordination clusters represent an extraordinarily diverse subset of molecules with potential for the pursuit of interesting and technologically applicable properties.[1] The encouragement for the synthesis of trinuclear copper complexes and for the study of their physical and chemical properties is the recent knowledge that blue multicopper oxidases contain a triangular unit of copper atoms.[2] In addition, there is a clear interest on cyclic-trinuclear metal complexes because these systems can be regarded as geometrically frustrated and offer the opportunity to test magnetic exchange models. Cluster synthesis has been achieved using both rational and serendipitous approaches, but common to these approaches is the use of chelating ligands to encourage the aggregation of the metal centres.

In the course of our recent investigation, copper(II) tetranuclear units have been synthesized from malonic acid and 2,4-bipyridine ligands.[3] Taking as an advantage the coordination ability of the malonate ligand, some modifications in its central carbon atom could enhance this property. Herein we report the synthesis and the crystal structure of new octanuclear copper(II) clusters with the hydroxo-phenylmalonate ligand (Fig. 1). These cluster are formed by two double m-oxo bridged triangular copper(II) structures and two other copper atoms pendant in the remaining coordination sites of the cluster.

References:

[1] Molecular Magnetism: From the Molecular Assemblies to the Devices, NATO ASI Series No. E321, ed. E. Coronado, P. Delhaes, D. Gatteschi and J. S. Miller, Kluwer, Dordrecht, (1996).

[2] A. Messerschmidt, Struct. Bonding (Berlin), **90** (1998) 37-68 and references therein.

[3] Y. Rodríguez Martín, Y. Rodríguez-Martín, M. Hernández-Molina, F. S. Delgado, J. Pasán, C. Ruiz-Pérez, J. Sanchiz, F. Lloret and M. Julve, CrystEngComm, **4** (2002) 440.

Figures:

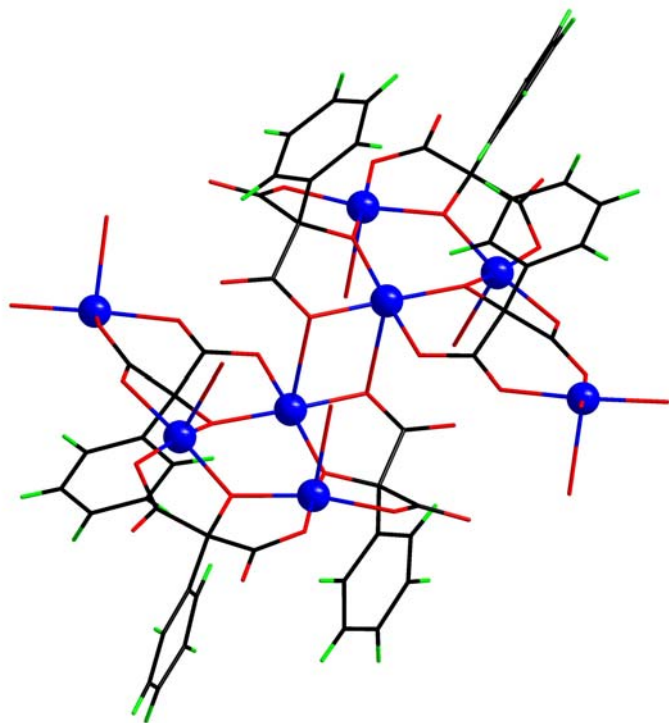


Figure 1