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A Novel Cobalt Helicate as an Example of Inorganic Helix

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Helicity can be found in a wide variety of natural and artificial structures. Helicoidal structures are considered to be promising architectures given their wide variety of properties. Thus, these chiral compounds have been exhaustively studied because of their involvement in different areas such as anion sensor, luminescence, magnetism, chirality, molecular machines, guest recognition and DNA binding. To prepare this type of metallo supramolecular structures, the ligands must be coordinated by wrapping around the metal ions. Particularly, helicates derived from Schiff bases are interesting due to the versatility and similarity of these ligands with other present in life.

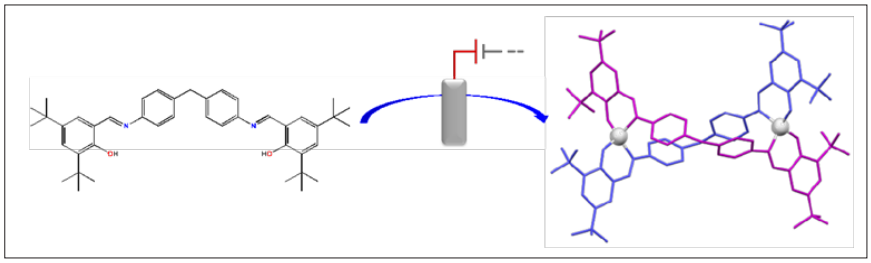

Figure 1. Structure of the cobalt dinuclear helicate derived from the Schiff base ligand H2L.

In this work, a novel neutral cobalt dinuclear helicate [Co2(L)2] 2CH3CN has been obtained by an electrochemical method (Figure 1). To achieve this, a dianionic and tetradentate ONNO Schiff base ligand H_2L has been designed. This ligand possess two binding domains [NO] separated by a semi-flexible aromatic spacer. This helical complex has been fully characterized both in solution and solid state. The crystal structure consists of discrete dinuclear helical molecules, constructed from two bi deprotonated ligand units arranged around two Co2+ atoms.

Biography:

Sandra Fernández-Fariña received her BSc and MSc degree at University of Santiago de Compostela (2015 and 2016, respectively). She is currently doing her PhD in metallo supramolecular chemistry at the Department of Inorganic Chemistry, University of Santiago de Compostela. She has authored two scientific publications related to her area of expertise and 22 participations in national and international conferences.