**Poster Presentation**

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*New hybrid materials based on metal sulfates and diamines*

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In the quest for new functional materials, inorganic frameworks are highly attractive due to their rigidity and stability and their superior electronic, magnetic, and optical properties. Organic building-blocks offer great promises for flexibility, structural diversity, and geometrical control.1 The integration of these two counterparts into a single structure generates hybrid organic–inorganic compounds that play a prominent role in the development of new advanced functional materials. Due to the complementary properties of organic and inorganic components, these materials are suitable for many promising applications in such areas as optoelectronics, environmental protection, or catalysis.2 While it is well known that hybrid compounds can be synthesized as 1dim, 2dim and 3dim assemblies, still a single set of factors determining the dimensionality of the resulting framework has not been identified up to now: literature reports show that temperature, time, pH value, stoichiometry and template identity can have a great influence on the reaction results3. Although many different organic molecule types have been used as templates it is well known that amines and diamines play a prominent role in the synthesis of hybrid compounds.

In our paper, we report a group of hybrid compounds of class II, i.e. with covalent bonds between the inorganic and the organic part. Here we present a new family of organic-inorganic hybrid layered materials based on Mn, Fe, Co, Ni, and Cu sulfates obtained by using 1,2-phenylenediamine (OPD), 1,3-phenylenediamine (MPD) and 1,4-phenylenediamine (PPD). We obtained polymeric 1dim chains, 2dim layers, or 3dim structures, when -ortho, -meta, and -para phenylenediamines, respectively, were used in the synthesis. Additionally, we want to focus on a simple, solvent-free synthesis approach by using only aromatic diamines and a transition metal sulfate; although in some cases reflux technique may be necessary for the synthesis to succeed. We observed that in these compounds, the aromatic amine acts as structure-directing agent giving, as a result, frameworks of different dimensionalities from similar organic building-blocks. Having materials with different dimensionality, the magnetic properties of the compounds were investigated and correlated with geometrical features; Additionally, chemical analyses and scanning electron microscopy (SEM) investigations were performed. The thermal stability , important for practical application and for catalytic tests, of the compounds was studied using thermogravimetric (TG) and XRPD vs. temp. techniques.

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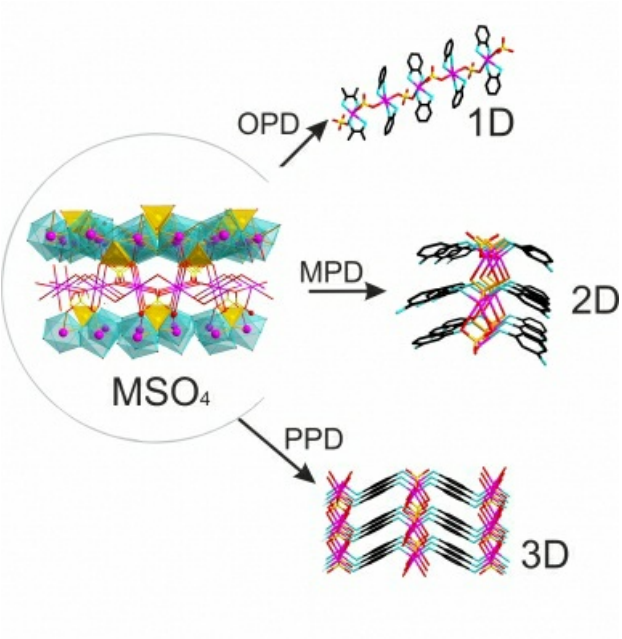


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