

Poster Presentation

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Open-framework metal sulfites and sulfite-oxalate based on honeycomb-like structures

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In recent decades Open-framework materials are emerging area of study in materials chemistry, because of their huge and vast class of applications in areas such as sorption, magnetism, fuel cell, electrical conductivity, and catalysis. Furthermore, these materials exhibit attractive structural and topological diversities having usual H-bonding and coordination bonding. The study started with aluminosilicate zeolites, using metal and primary building units like silicate, phosphate, sulfate, metal phosphates, sulfates, and selenate etc. constitute an important family of open-framework structures. The sulfite based framework were very few explored due to the inherent instability of sulfite anion in acidic as well as hydrothermal conditions using organic amine as template, where the sulfur atom in sulfite ion is in the +4 oxidation state, which is relatively unstable under hydrothermal and acidic conditions and easily converted in +6 oxidation state and form sulfate ion. We were interested in exploring the missing amine template sulfite oxyanion and sulfite-oxalate hybrid materials with varying structure dimensionalities, and their various applications. Here we present the results of the investigations of metal sulfites employing transition metal with diverse structures and dimensionalities in presence of organic templates. The introduction of oxalate anion into the framework materials change the crystallographic signatures of the crystal lattice and adds additional structural complexity where the oxalate moiety acts as a ligand or bridging species. Thus, oxalate anion has been exploited in conjunction with sulfite and their results. Here we represent the synthesis and characterisation of a varying structural dimensionality of open-framework metal sulfites and metal sulfites-oxalates materials.

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