

NEW EXTENDED STRUCTURES OF ORGANOTIN(IV) WITH DICARBOXYLIC ACIDS

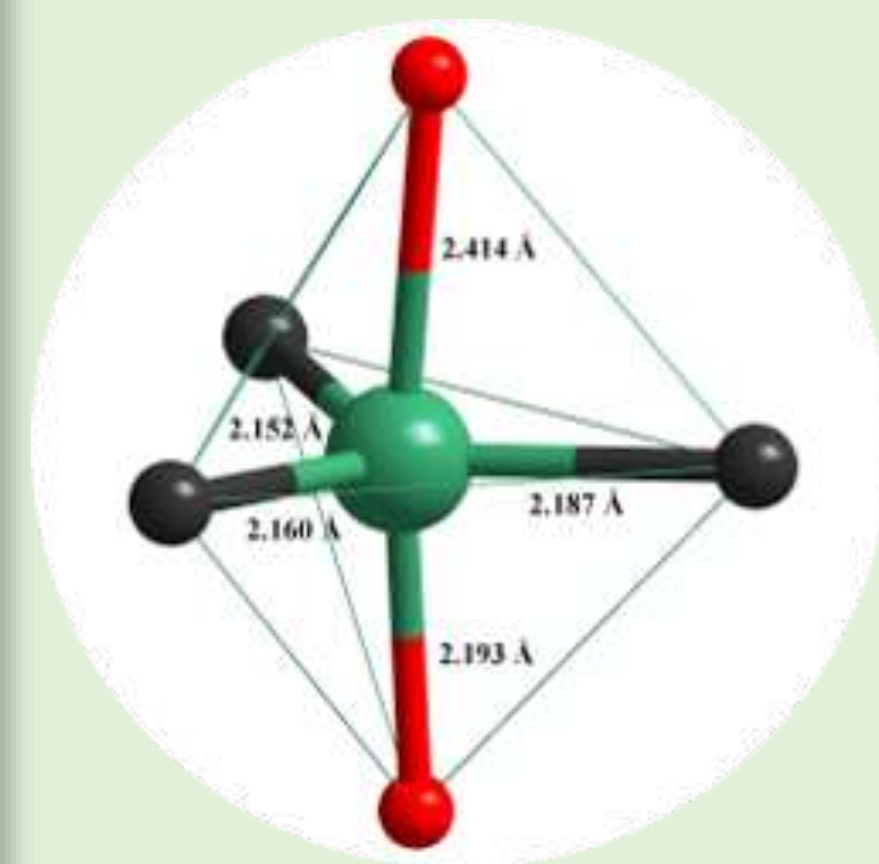
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Abstract



Coordination sphere

Organotin(IV) coordination polymers have been considered for their ability to stabilize specific stereochemistry and to induce diverse dimensionalities in their complexes, for their outstanding applications in agriculture, industry, biology, medicine, as well as in the synthesis of various types of chemical compounds [1-3]. Several new extended structures have been synthesized by slow evaporation method, at room temperature, in the reaction of $^n\text{Bu}_3\text{SnCl}$ with deprotonated dicarboxylic acids: biphenyl-4,4'-dicarboxylate (bpdc), 1,4-cyclohexanedicarboxylate (1,4-chd), adipate (adp), and fumarate (fum) employed as linkers.

All compounds were obtained as colorless single crystals and characterized in solid state by elemental analysis, FTIR spectroscopy, as well as single crystal and powder X-ray diffraction.

Obtaining various polynuclear organotin compounds is based on the proper choice of organotin(IV) precursors that act as nodes in extended structures, but also of the ligands that act like spacers. The crystallographic investigation of the new compounds reveals novel network topologie

Synthesis

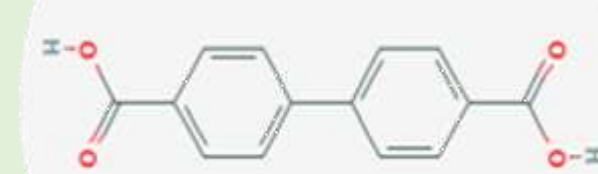
$^n\text{Bu}_3\text{SnCl}$ / solvent

solvent: MeOH or EtOH

ligand / solvent

LIGANDS:

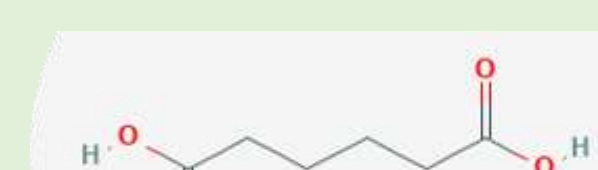
bpdc



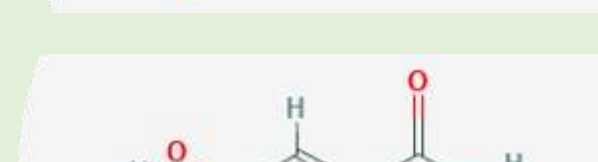
1,4-chd



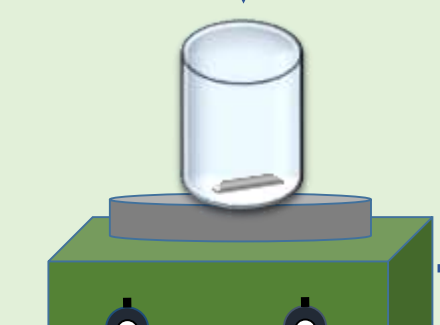
adp



fum



Conditions:
- room temperature
- 30 minutes



Polynuclear compounds

$[(\text{CH}_3\text{OH})_2(^n\text{Bu}_3\text{Sn})_2(\text{bpdc})]$



$2_\infty [(^n\text{Bu}_3\text{Sn})_2(1,4\text{-chd})]$



$2_\infty [(^n\text{Bu}_3\text{Sn})_2(\text{adp})]$

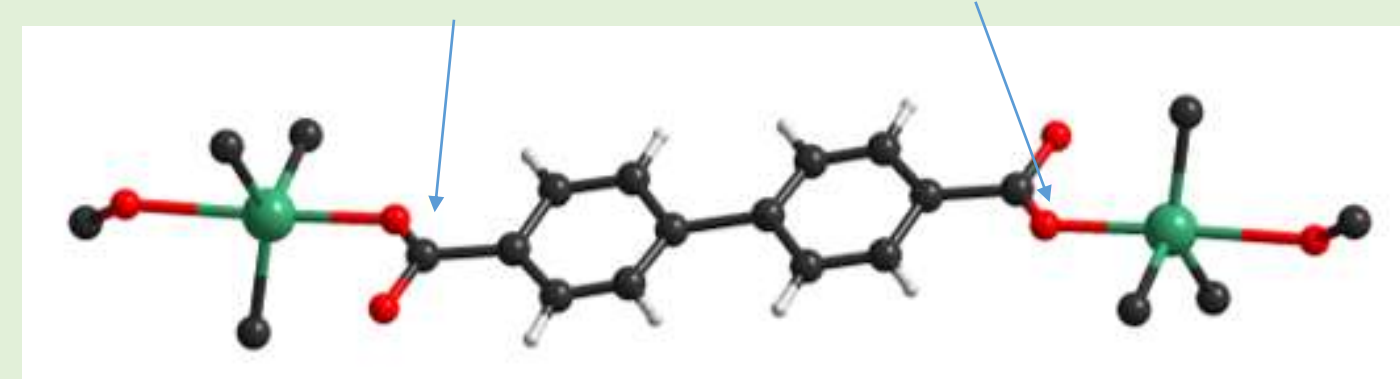


$3_\infty [(^n\text{Bu}_3\text{Sn})_2(\text{fum})]$



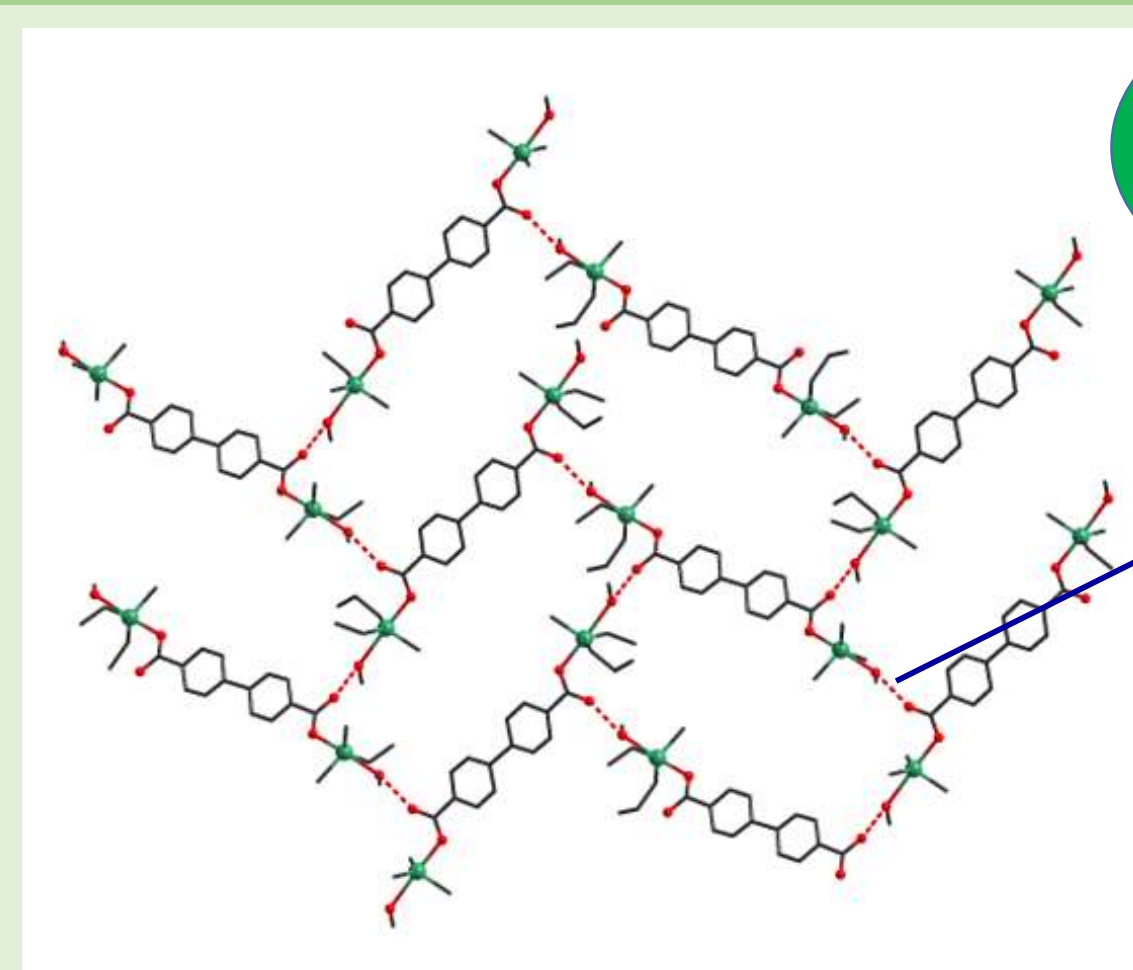
Ligand coordination

monodentate

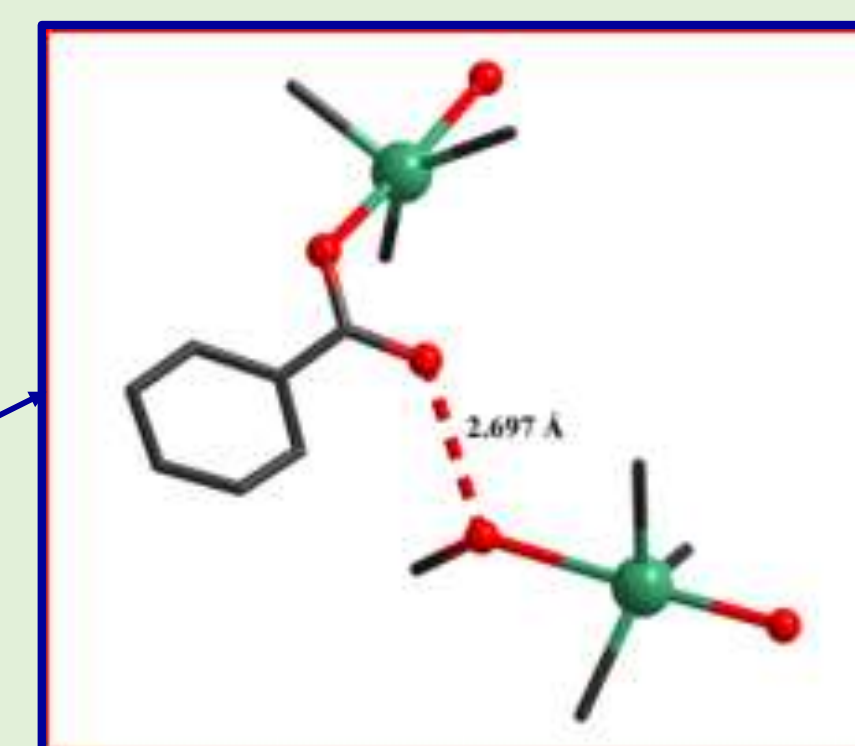


Bidentate, bridge

Extended structure

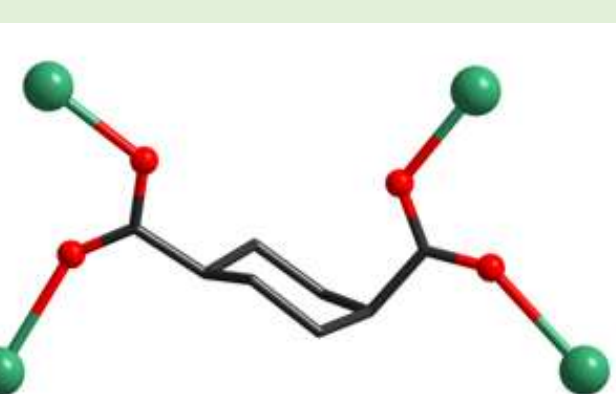
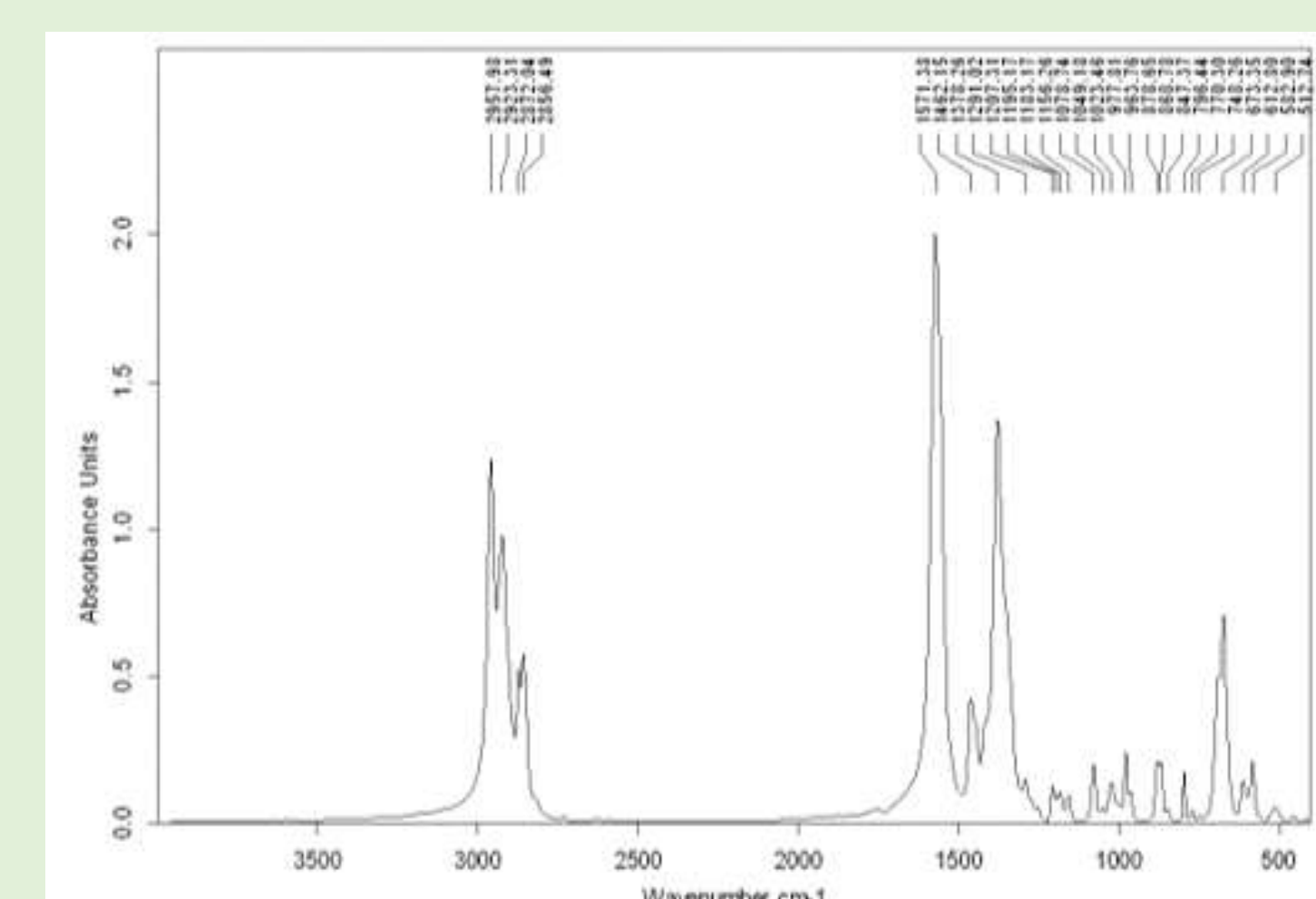
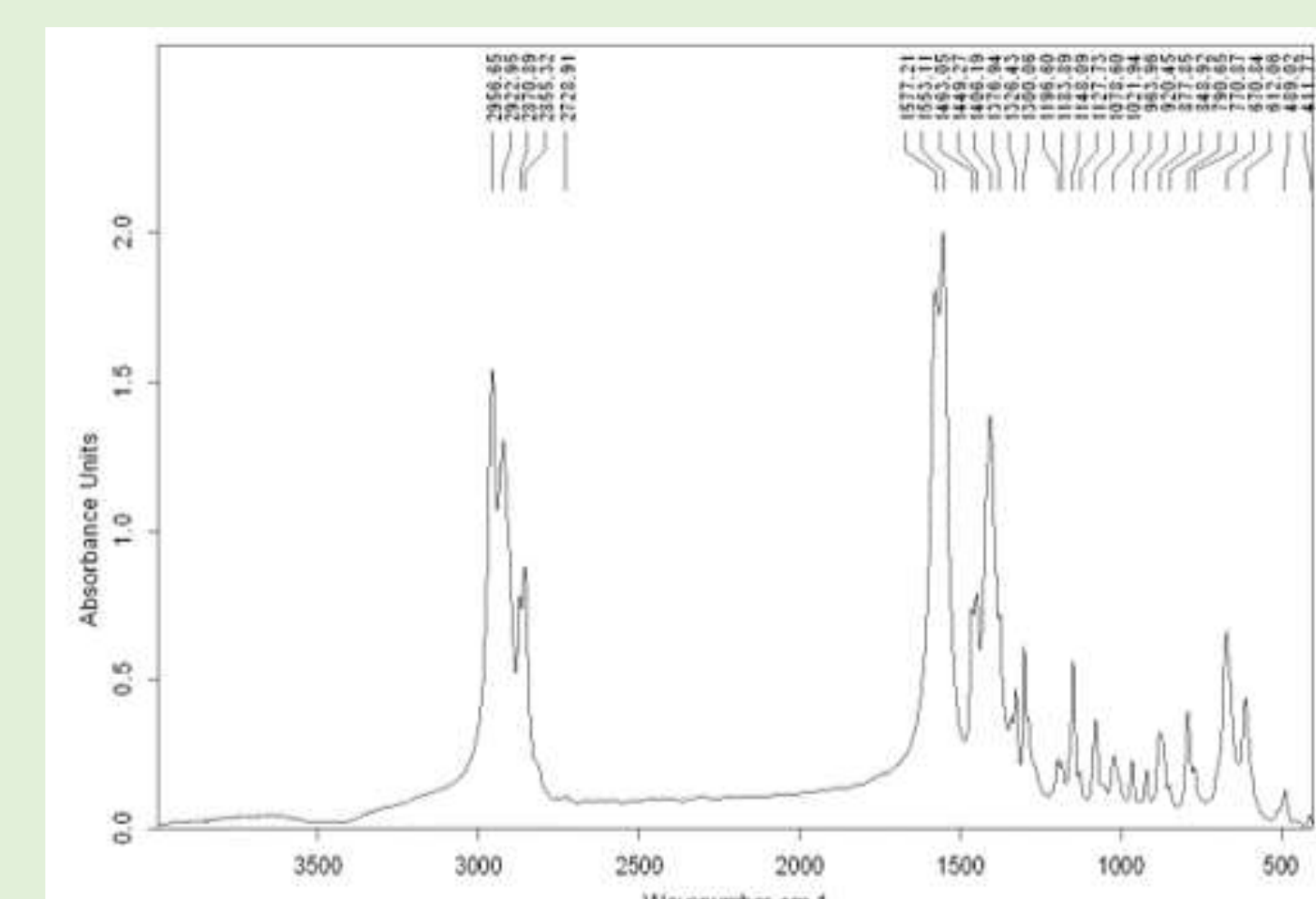
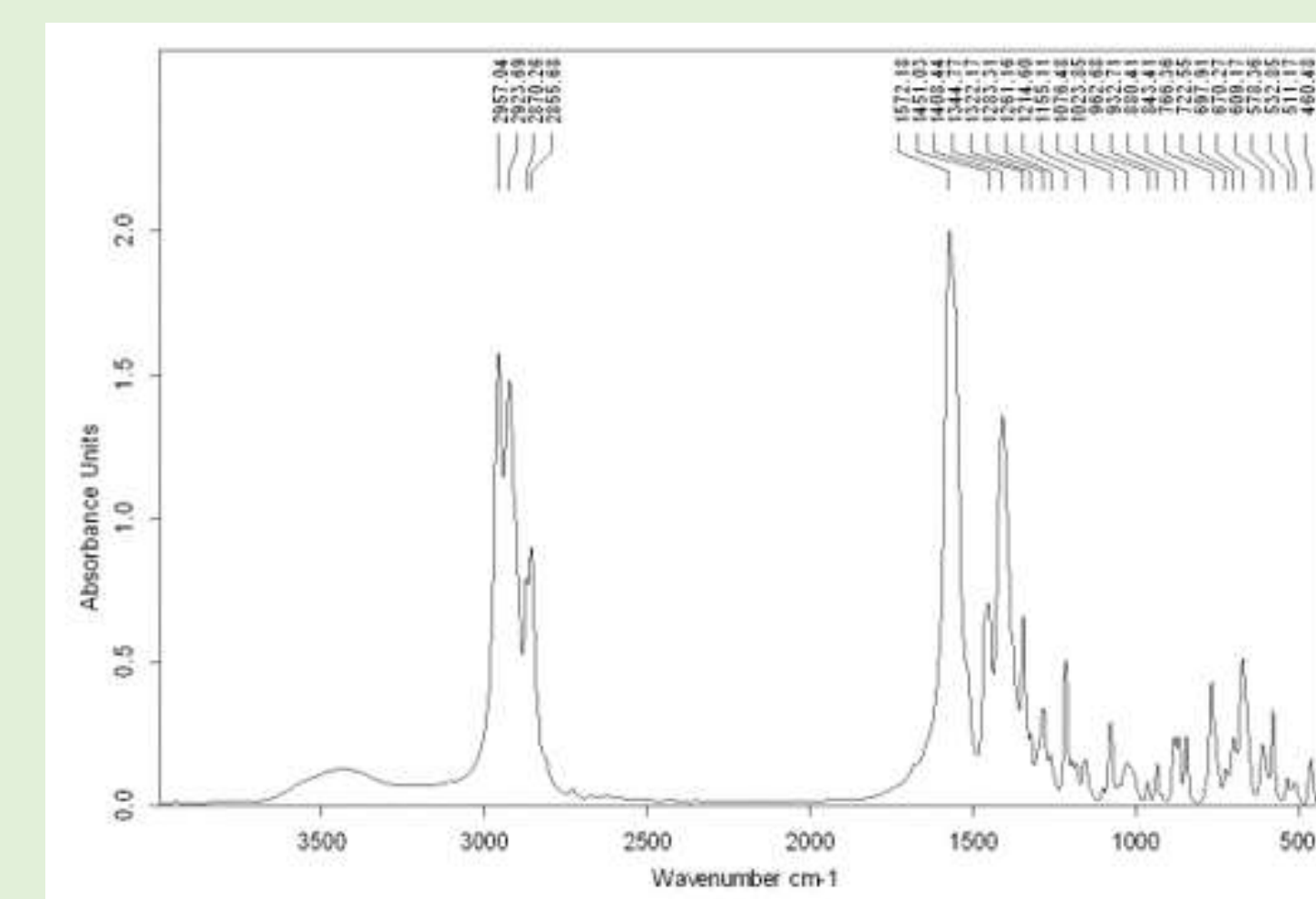
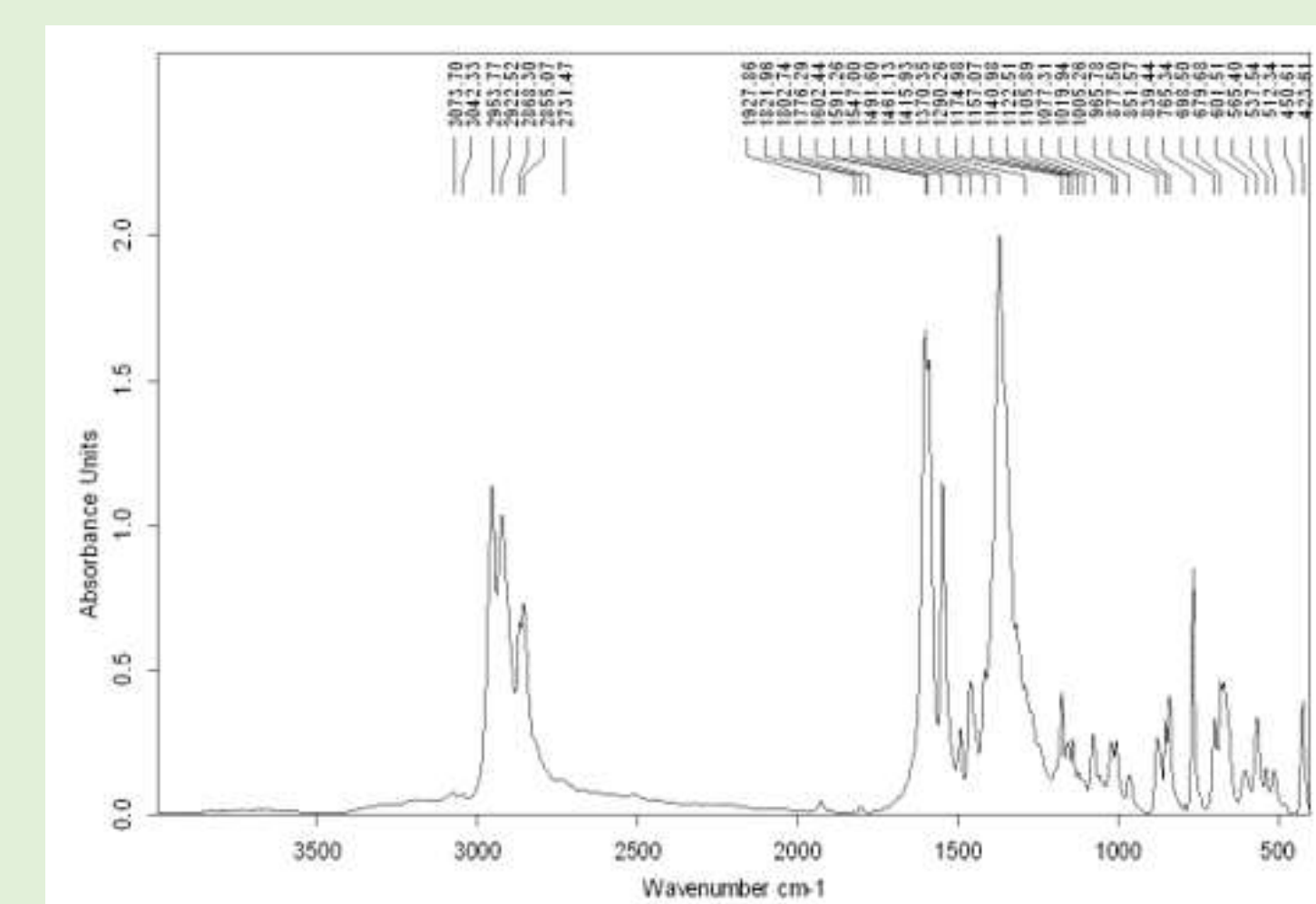


0-D



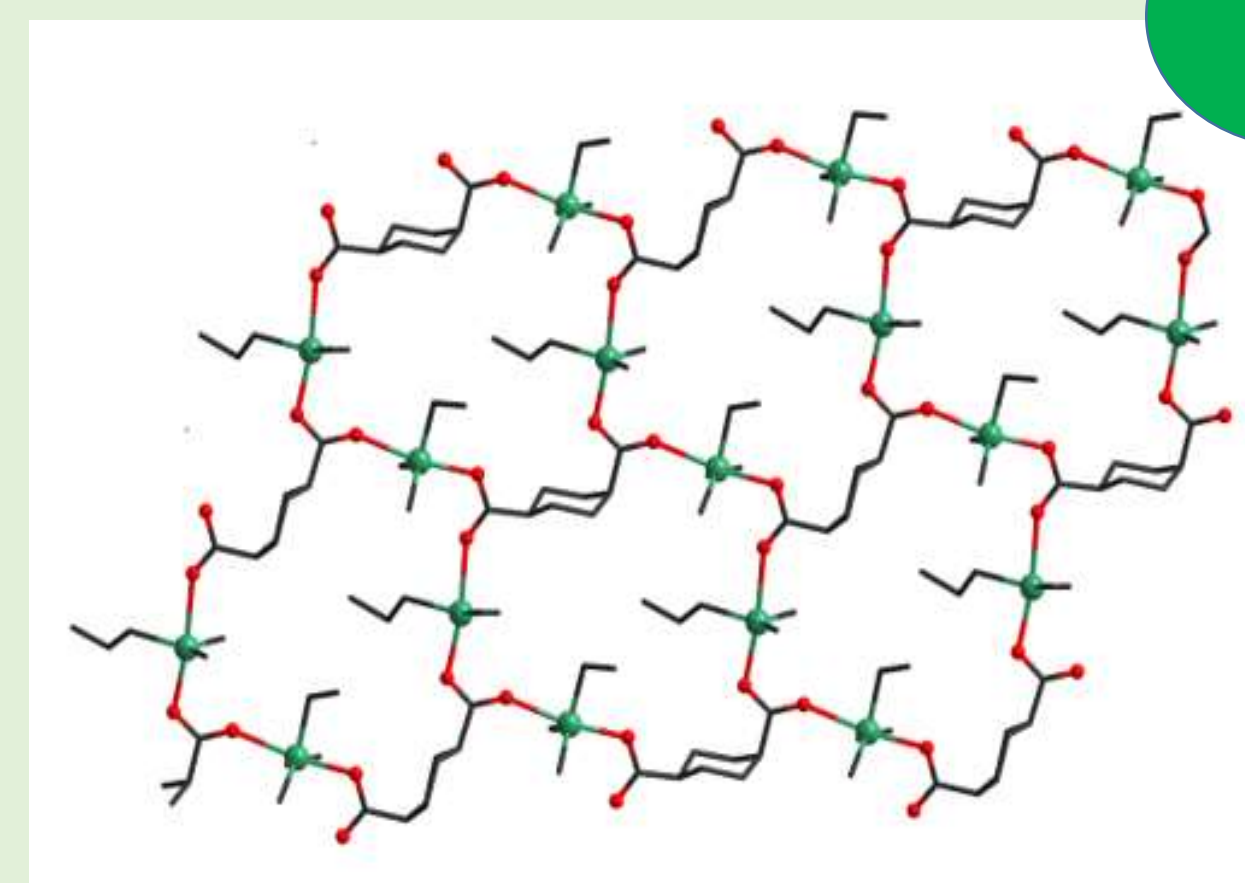
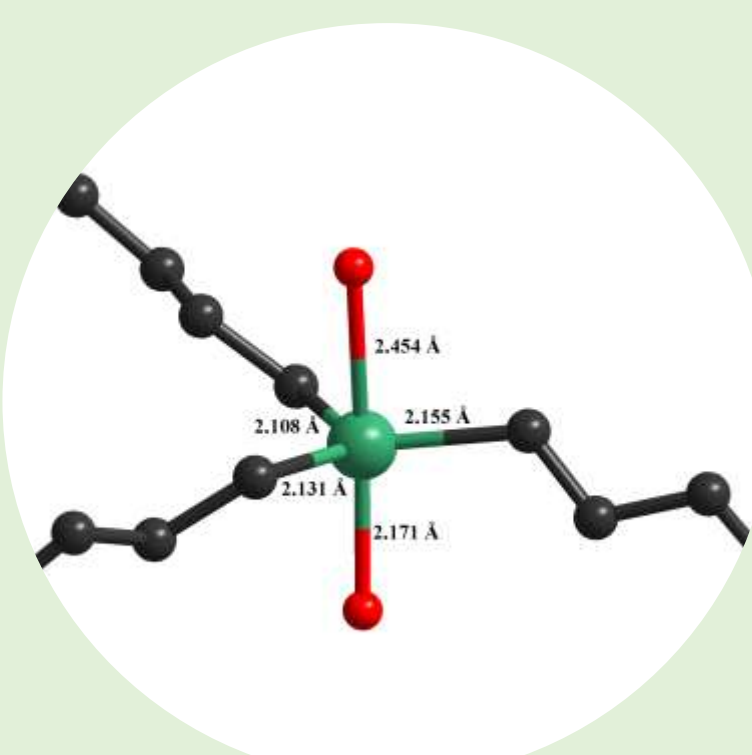
hydrogen bond

Spectral characterization

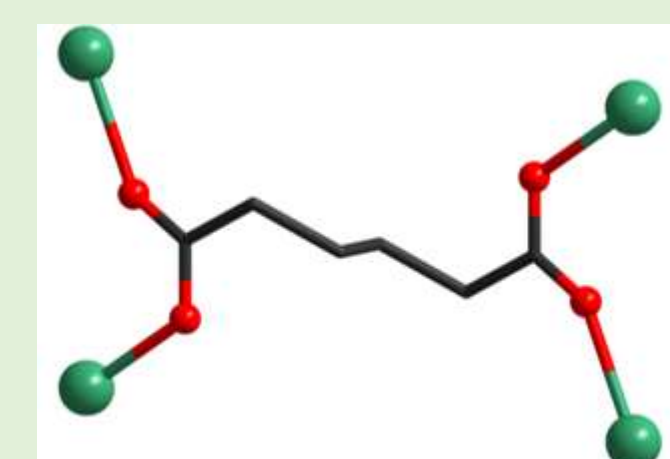


tetradentate

syn-anti

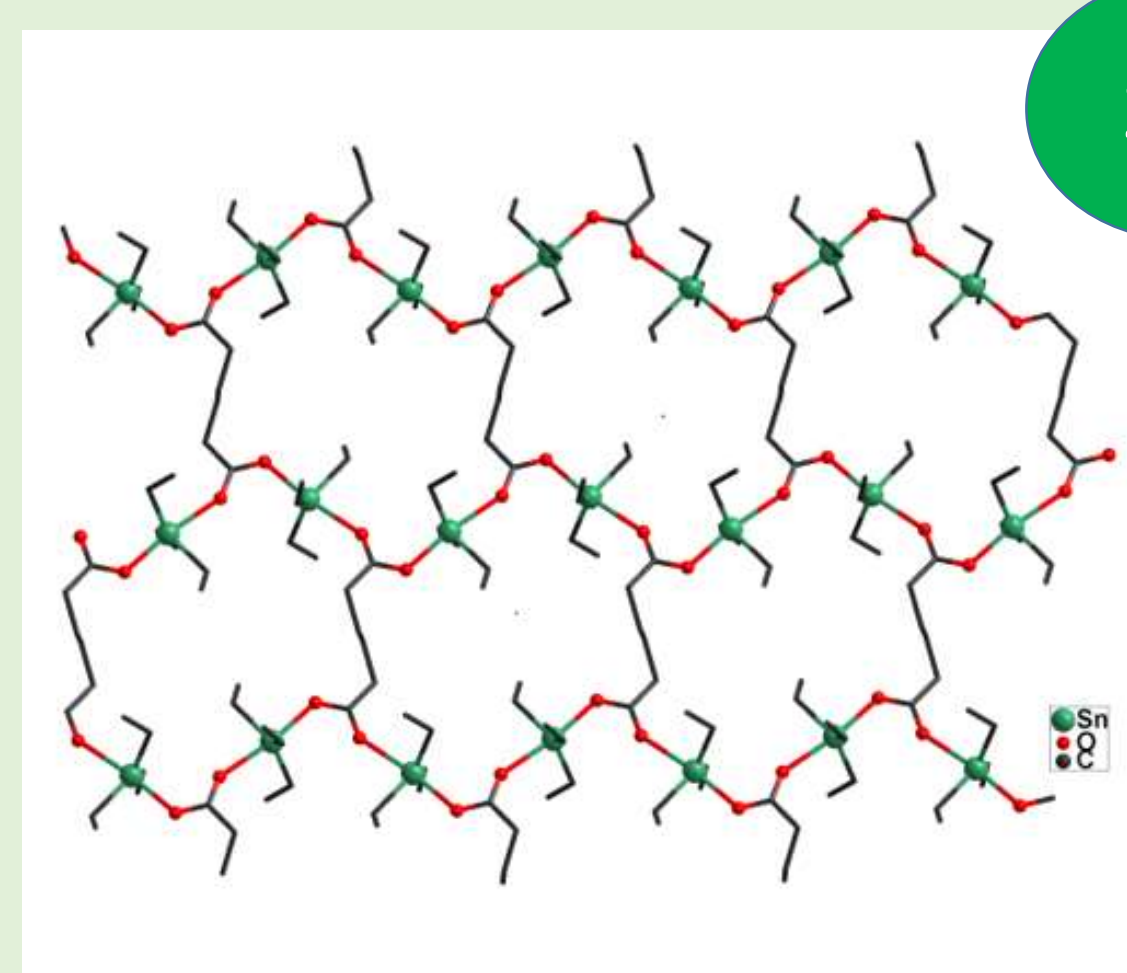


2-D



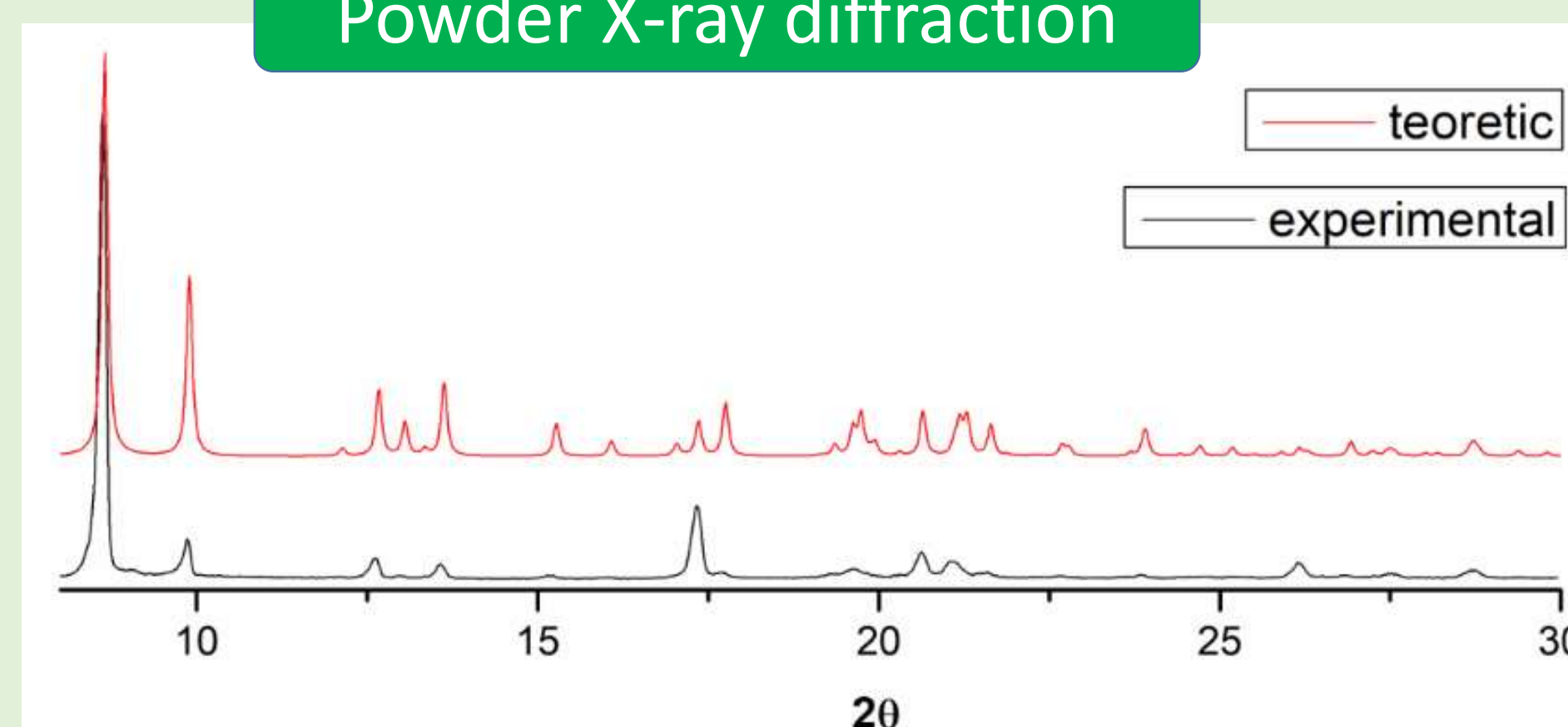
tetradentate

syn-anti

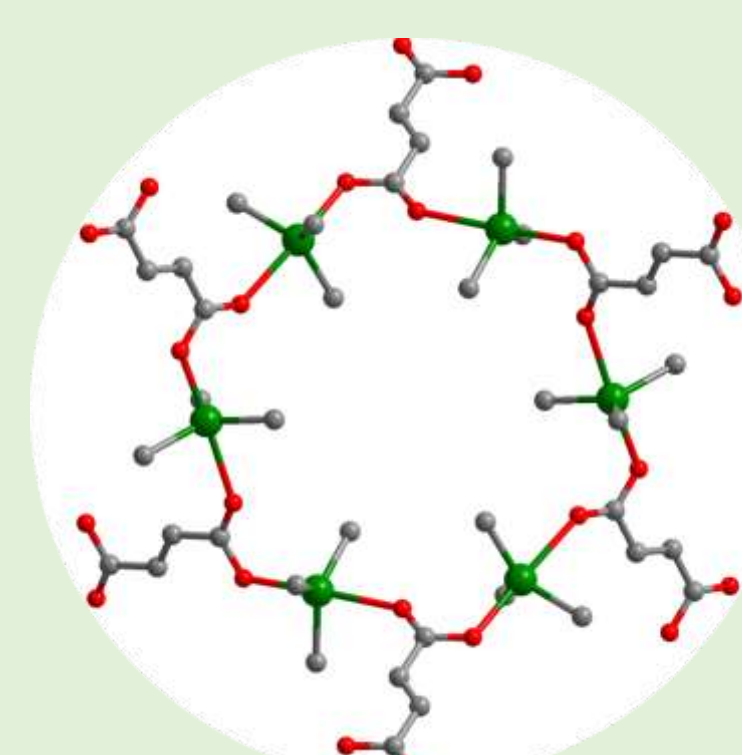


2-D

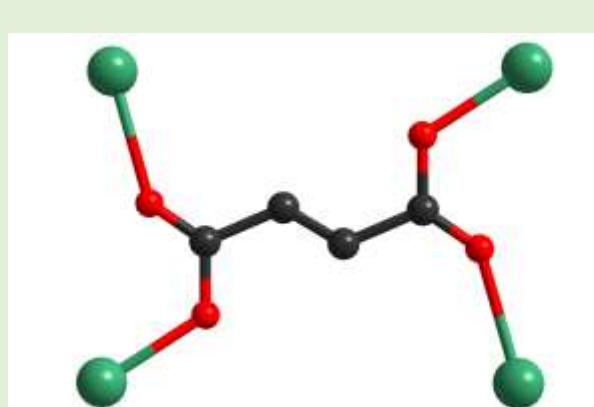
Powder X-ray diffraction



3-D



hexagonal ring



tetradentate

syn-anti

