

*Molecular crystals of o-phenylenediamine with organic dicarboxylic acids*Raghavaiah Pallepogu¹, Risha Mishra¹¹Department of Chemistry, Dr. Harisingh Gour University, Sagar, India

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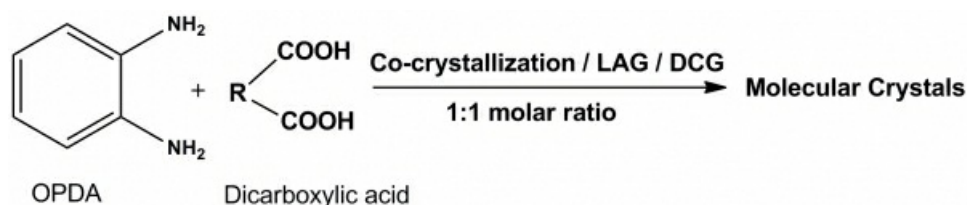
Molecular recognition, is a process where we can design and build supramolecular assemblies of different chemical species with the help of specific non-covalent interactions, like hydrogen bonding, aromatic π - π stacking, steric repulsion and van der Waals forces.¹

Protonation of o-Phenylenediamine (OPDA) with simple organic dicarboxylic acids resulted to produce the molecular crystals of different architectures. The single crystal X-ray diffraction study confirmed the formation of salts of OPDA-Fumarate (OPDFA), [C₆H₉N₂].[C₄H₄O₄] (1), OPDA-malate (OPDMA), [C₆H₉N₂].[C₄H₅O₅] (2) and OPDA-Succinate [C₇H₄N₂O₆].[C₃H₇NO] (3). All these structures adopted the hetero supramolecular synthons.² Interestingly, both the protons of fumaric acid is transferred to OPDA to form 1:2 product but one proton each in the cases of malic acid and succinic acid transferred to OPDA to 1:1 product. Compound 1 crystallized in orthorhombic body centred non-centrosymmetric Iba₂ space group, Compound 2 crystallised monoclinic centrosymmetric P2₁/c space group and Compound 3 crystallized in triclinic centrosymmetric P-1 space group with Z' 2.3 The resultant products are also prepared using mechanochemical experimental techniques i.e. liquid assisted grinding / dry co-grinding and the confirmed products are analysed using powder x-ray diffraction and thermal studies.

[1] Desiraju, G. R. (1997) Chem. Commun., 1475-1482.

[2] (a) Margaret C. E., (1990) Acc. Chem. Res., 23 (4), 120-126; (b) Desiraju, G. R. (1989) Crystal Engineering. The Design of Organic Solids, Elsevier, Amsterdam.

[3] What is Z'? (Durham University) <http://zprime.co.uk/>



Keywords: [supramolecular synthons](#), [high Z'](#), [mechanochemical experiments](#)