

## **An Exploration of Polymorphism in Molecular Crystals Using High Pressure**

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The application of high pressure to simple molecular compounds is proving to be a powerful method for exploring the polymorphic behaviour of these compounds [1]. Direct compression of either single crystals or powders, and crystal growth from the melt are two methods that have been used to prepare new polymorphs of compounds that have been structurally characterised by X-ray and neutron diffraction. Recent examples include sulfuric acid monohydrate, thiourea dioxide, and acetamide. The development of methods for *in situ* high-pressure growth of single crystals from solution has allowed a much wider range of compounds to be studied including pharmaceuticals (e.g. paracetamol, piracetam), and has enabled us to prepare new solvates [2]. We have also demonstrated how metastable polymorphs and solvates can be prepared under pressure with subsequent recovery of bulk quantities at ambient pressure, and how pressure can be used to screen compounds for polymorphism and solvate formation.

[1] Fabbiani F. P. A., Allan D. R., Dawson A., David W. I. F., McGregor P. A., Oswald I. D. H., Parsons S., Pulham C. R., *Chem. Commun.*, 2003, 3004. [2] Fabbiani F. P. A., Allan D. R., David W.I.F., Moggach S.A., Parsons S., Pulham C. R., *CrystEngComm*, 2004, **6**, 504.

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