MS021.O04

Polymorphs, pseudopolymorphs, and the crystal engineer: friends and foes

Leonard Richard MacGillivray[1]
[1]*Department Of Chemistry, University Of Iowa, Iowa City, United States*
E-mail: len-macgillivray@uiowa.edu

The goal of the crystal engineer to design solids with predictable properties is generally predicated on the idea that molecular components that form a solid will assemble via supramolecular synthons. While supramolecular synthons will typically form with success vis-a-vis organic solution-phase chemistry, a last 'stance' in crafting the structure of an organic solid may likely depend on influences of polymorphism and related pseudopolymorphism. Indeed, the ability of components that make up a crystal lattice to form different crystal structures - exhibit polymorphism - can affect properties such as solubility, gas uptake, and reactivity, and have ramifications, for example, to legal issues surrounding pharmaceutics. The common practice of chemists to form crystals from solution also means that it is important to consider the crystal landscape to involve incorporation(s) of solvent - pseudopolymorphism. In this presentation, the terms polymorphism and pseudopolymorphism will be discussed with examples from our laboratory and the recent literature. An attempt will be made to discuss how polymorphism and pseudopolymorphism impact the practice of crystal engineering as related to the design and tailoring of organic solids.

Keywords: polymorphism, pseudopolymorphism, crystal engineering