Poster Presentation

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Sublimation catalysis and polycrystalline powder templates for polymorph control

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The use of additives to achieve polymorph control of solution crystallization has been demonstrated. (Lee & Byrn, 2010) We recently reported the first example of additive control of polymorph crystallization from the gas phase. (Kamali et al., 2016) In pursuit of a solvent free green alternative to solution based processes we have applied the combined use of additives and polycrystalline powder templates for polymorph control of gas phase crystallization to a range of pharmaceuticals. Additives in general can accelerate the sublimation process and reduce the sublimation temperature by at least 20 °C. Some of the polymorphs that have been successfully crystallized in pure form are carbamazepine FI to FIV, paracetamol FI and FII, piracetam FII, p-aminobenzoic acid FI and FV, metaxalone FI and FII, mefenamic acid FI and FII and dihydrocarbamazepine FI and FII. The use of a polycrystalline powder template of a closely related compound, recently reported where dihydrocarbamazepine was used as a template for carbamazepine (Srirambhatla et al., 2016) can also be applied in reverse to obtain polymorph control of dihydrocarbamazepine crystallization. It is necessary to have accurate control of the temperature on both the hot or sublimation side and the cold or deposition side for effective polymorph control. It is also necessary to control the sublimation temperature by accurate vacuum control. The additives used to enhance the sublimation process include carboxylic acids and amides. No traces of the additives used to catalyse the process have been found in the products.

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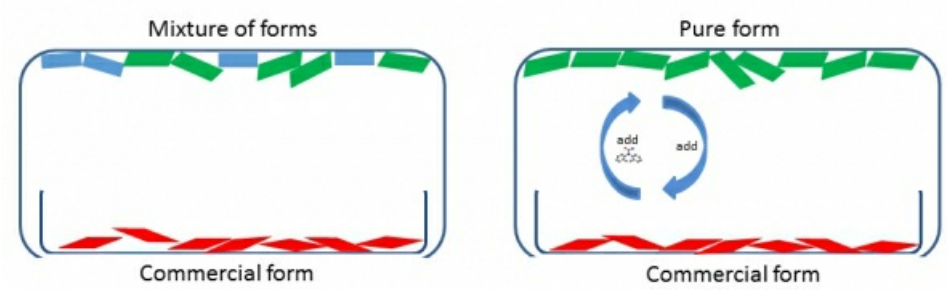

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