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- PhD 1995, University of Dortmund, Germany
- “habilitation” 2002, University of Dortmund, Germany
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Research Field

- Polymorphism is a widespread phenomenon in pharmaceuticals with important regulatory and patenting implications. Different polymorphs have different physicochemical properties that directly affect absorption, bioavailability and shelf-life.
- Qualitative & quantitative polymorph analysis
 - Crystallisation techniques & structure solution
 - Crystal size, crystal habit and polymorph control
 - Amorphous pharmaceuticals

Scientific Impact

- 88 peer-reviewed publications and review articles
- H-index of 24
- > 1900 citations
- > 50 invited seminars or lectures
- Organizer of the 13th International Symposium of Applied Bioinorganic Chemistry

Technological Impact

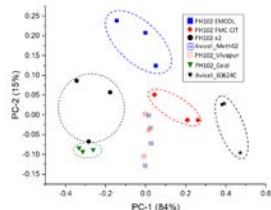
- Polymorph analysis: development of accurate and reliable models to monitor phase purity of solid-state pharmaceuticals (quality assurance)
- Crystallization techniques: control of size, crystal habit and polymorphism
- Amorphous pharmaceuticals: advancing the formulation of poorly soluble drugs

Spectroscopy and Chemometrics

Goal: Streamlining solid state analysis by coupling spectroscopy with multivariate analysis.

Why: Multivariate analysis of crystallization data gives information on physical properties (e.g. particle size/aspect ratio) and helps to direct crystallisation processes.

Who: Dr. Pol MacFhionnghaile

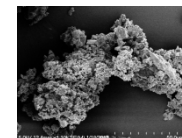


Amorphous Composites

Goal: Stabilisation of the amorphous form of fast crystallising pharmaceuticals using multifunctional bridging linkers.

Why: Amorphisation is a promising strategy to enhance the dissolution behaviour, i.e. bioavailability of poorly soluble drugs.

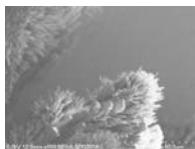
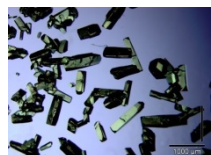
Who: Ms. Katarzyna Gniado



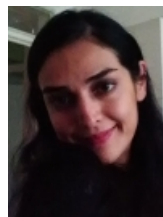
Polymorph Control

Goal: Use of sublimation catalysis and templates for polymorph control from the gas phase.

Why: Green, solvent-free method of crystal processing; reduction of energy costs through additive-enhanced sublimation.



Who: Ms. Naghmeh Kamali



Impurity effects in Crystallization

Goal: Understanding the effect of impurities on the polymorphic form and crystal morphology in solution crystallisation.

Why: Industrial crystallisation processes usually take place from solutions containing by-products, reactants and/or inorganic salts.

Who: Mr. Francesco Civati

