



**SOLVED
WITH**
POWER & PROCESS

patheon

Solid state chemistry

Meet your API and OSD milestones with confidence.

API with poorly defined physical properties and/or a poor crystallization process can impact downstream process development, formulation and performance which can have adverse effects on development milestones and even lead to product failure. Four key solutions link drug substance and drug product development:

**Solid state
characterization**

**Polymorph
screening**

**Salt
screening**

**Early crystallization
process development**

Enhance your API and drug product by establishing an optimal solid form, ensuring you're prepared for successful development and scale up.

Equipment		Linz, Austria	Cork, Ireland	Florence East, South Carolina
Process development				
Automated reactors	Mettler toledo optimax	•	•	
	Technobis crystalline	•		
	Technobis crystal 16	•		•
	Mettler toledo easymax		•	
In-process analysis	Mettler toledo particle track (FBRM)	•	•	
	Mettler toledo particle vision and measurement	•		
	Mettler toledo reactIR	•		
Filtration	Laboratory leaf filters	•	•	
	Agitated nutsche filters	•	•	
Solid state characterisation				
Structural and powder characterisation	XRPD	• (+ non-ambient stage)	•	• (+ non-ambient stage and in situ slurry stage)
	True density/gas pycnometry	•		•
	Powder density	•	•	•
	Powder and semi-solid rheology	•	•	
	Compressibility	•	•	
	Specific surface area		•	•
Thermal and gravimetric analysis	Differential scanning calorimetry	•	•	•
	Thermogravimetric analysis	• (+ mass spectrometry)	•	• (+ mass spectrometry)
	Dynamic/gravimetric vapour sorption	•	•	• (+ camera and Raman spectroscopy)
Particle size and shape	Optical microscopy/polarised light microscopy	•	•	•
	2D image analysis		•	
	Electron microscopy		•	•
	Laser diffraction	•	•	•
	Classification/sieve analysis	•	•	•
Screening				
Polymorph and salt screening	Crystallization robot	•		
High throughput characterisation	XRPD and Raman microscopy	•		
Solubility screening	HPLC	•		

Across a global network, Thermo Fisher Scientific integrates Small Molecule API, solid state chemistry and drug product development to produce formulation enabling API to speed your product development to the next milestone.

- The Linz, Austria, development laboratory focuses on crystallization process development starting from early phase development through to commercial, supported by the requisite solid state characterisation capabilities. Linz also supports solid form screening (polymorph and salt) as well as dedicated early development solid state characterisation.
- The Cork, Ireland, materials science laboratory has extensive solid state characterization capabilities, working with both molecular solids (API and intermediates) and multi-component systems (drug product).
- Florence, SC, USA, is well equipped for solid state characterization supporting process R&D and manufacturing including analytical method development, verification and validation.



Linz, Austria



Cork, Ireland



Florence East, South Carolina

The Linz, Cork and Florence sites have extensive material science expertise and are integrated with API and drug product development and clinical services sites to provide services to simplify your supply chain and reduce timelines for product development.

Development, clinical supply and commercial manufacturing An integrated global network



● API ● Biologics ● Viral Vector ● Development ● Clinical Trial Solutions ● Commercial Manufacturing ● Specialty Warehousing