

# Crystalline

## Seeing is believing



**Access crystallization and formulation information at mL scale with the Crystalline series.**

Optimize your crystallization process at an early stage with only small amount of material. The Crystalline with through the vial analytical capabilities like turbidity, particle visualization or Raman is easy to set up and operate. The ergonomic design and effortless operation removes all the barriers to using technology which was previously only accessible to experts. The intuitive control and analysis software gives every user access to valuable information with small amounts of material. No insert probes into reaction vessel and no cross contamination.

### **New software!**

New software with improved research capabilities. Growth rate and dissolution measurements have never been so easy.

### **Advanced analytical features**

Digital particle viewer, Real time Raman, Particle Size Distribution (PSD), Turbidity.

**Technobis**  
  
crystallization systems



## Seeing is believing

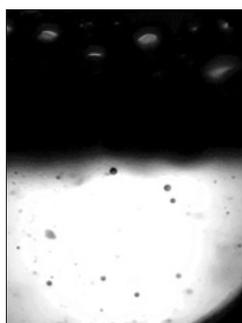
The Crystalline PV combines temperature and turbidity measurements with real time particle imaging. With four or eight high quality digital visualization probes, seeing what is happening in the vial has never been easier: no moving parts, no cumbersome insertion probes. With a robust design, the probes are contained in a sealed, pre-aligned and sturdy environment, giving the user walk-up access to four or eight parallel particle view cameras.

- Visualization of the complete crystallization or formulation processes
- Real time particle size and shape information at the smallest scale

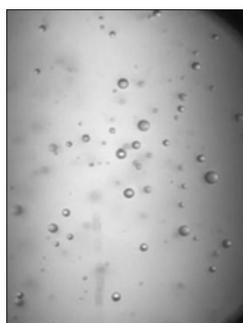
## Find out what is happening

Have you ever wondered what is happening during crystallization or formulation? How do you know if the sample is aggregating, foaming or oiling out? Stop guessing: now you can see what is happening. You can easily correlate the turbidity signals with visual information – finally getting the complete picture of the crystallization or formulation processes.

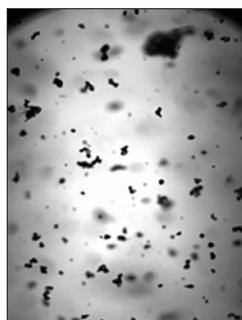
- Polymorph and solvate screening
- Monitoring of habit changes
- Searching for less stable intermediates
- Controlling growth of certain polymorphs
- Develop and optimize your process
- Optimize and control your formulation process



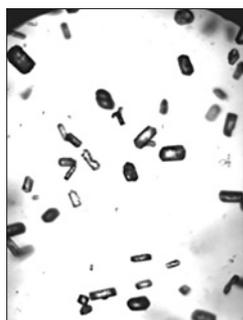
Foaming



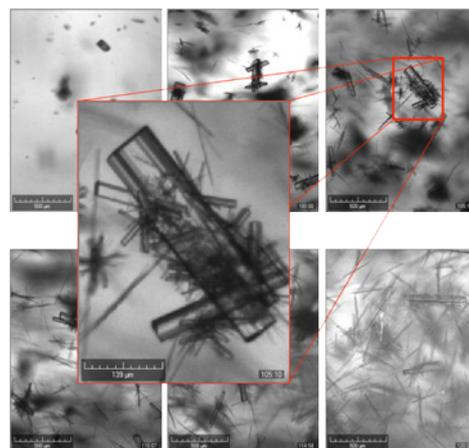
Oiling out



Agglomerates



Crystallization



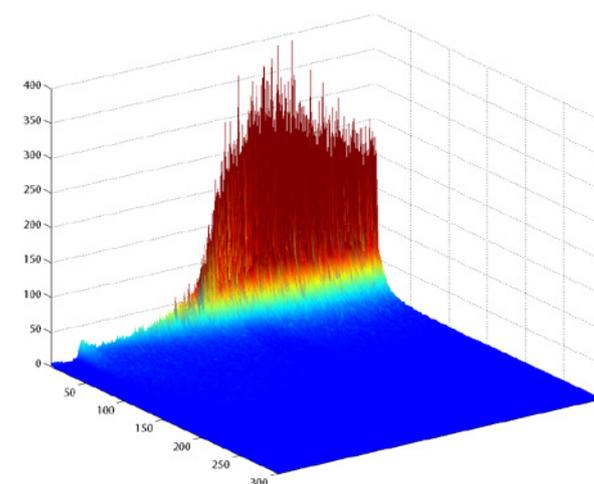
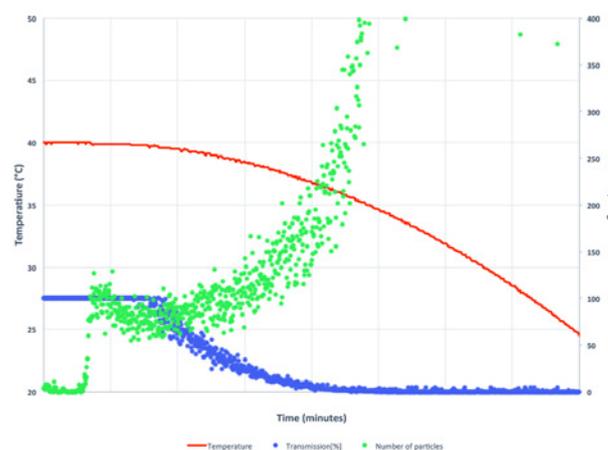
Anti-solvent crystallization

## Control the process

Have you ever puzzled over off-line analytics, trying to figure out what happened during the process? With the real time particle viewer you know exactly what is happening, when it is happening. By making use of the accurate thermocycling program of the Crystalline PV, you can investigate and control any crystallization or formulation process.

- Study nucleation and crystal growth
- Investigate reaction rates
- Monitor slurry conversions, oiling out, foaming, gelling, aggregation

Monitoring particle count during crystallization



## Real time Raman

The Crystalline RR gives the user access to real time Raman spectroscopy, in combination with a sophisticated parallel crystallizer with turbidity measurement. The independent Raman probes are integrated in an ergonomically designed, pre-aligned, robust and sealed module. The user does not have to insert any probes into the reaction vessel.

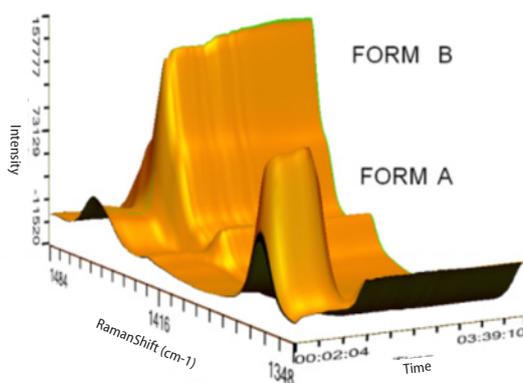
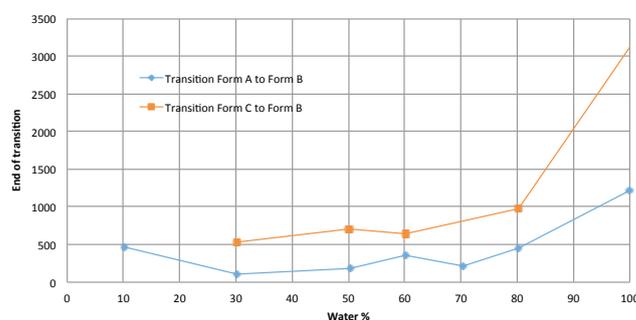
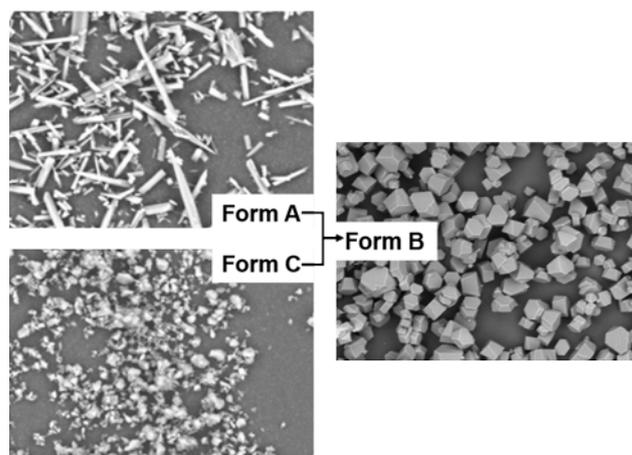
## See when it happens

Traditionally analytical techniques are implemented in an off-line fashion, where samples have to be removed from the reaction or process, in order to obtain information about chemical composition or interactions. With offline techniques one obtains information on a few data points in time, but the nagging question always remains: Have I missed something? With the Crystalline RR it is easy to follow crystallization processes and to study polymorph conversions, hydration or the formation of solvates in slurries.

Chemical interactions like co-crystal and salt formation can be studied effortlessly during the process. This hassle-free tool enables you to screen many solvents, counter-ions or co-formers on a small amount of compound – giving you valuable answers much earlier on in the process and in short time.

- Real time information on chemical interactions
- Drive reactions based on spectroscopic results
- Measure relative reaction rates

RAMAN monitoring of spontaneous transitions



## Crystalline SE

- 8 Reactors with a working volume of 1-5 mL
- 8 Independently controlled temperature zones
- Temperature range -25°C to 150°C
- Linear and non-linear temperature profiles supported
- 0°-20°C/min heating/cooling rate
- Temperature control accuracy: 0.1°C
- Variable overhead stirring in each reactor
- Variable magnetic stirring in each reactor
- Stirrer speed: 0 – 1250 rpm
- Turbidity measurement in each reactor
- Reflux, slow evaporation, anti-solvent and seeding capabilities

## Crystalline PV

- Crystalline SE
- 4 or 8 parallel visualization probes
- Sample illumination: front and back pulsed lighting
- Automatic light intensity control
- Each camera is individually controlled and programmable
- Image analysis software: particle size distribution and shape

## Crystalline RR

- Crystalline SE
- 4 parallel real time Raman probes
- Correlation of Raman spectra with temperature profiles and turbidity signals
- Software interface for spectroscopic analysis
- Compatible with any type of Kaiser RAMAN Spectrometer

Also part of Technobis Crystallization Systems workflow



**CrystalBreeder**



**Crystall6**



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