



CrystalSCAN

High Throughput Crystallisation Unit

Key Features

- ◆ Obtain accurate solubility and MSZW data
- ◆ Automated dilution / solvent addition
- ◆ 4 or 8 samples in parallel
- ◆ Sample size 2mL to 350mL (interchangeable)
- ◆ Temperature range -80°C to +250°C
- ◆ Innovative stirrer design to prevent crystal damage

Each CrystalSCAN consists of:

- ◆ 4 or 8 zone PolyBLOCK reaction block
- ◆ Choice of reactors with all probes
- ◆ Dosing pumps (typically 2 reagents, more optional)
- ◆ PC / Software



Software

HEL's WinISO software with pre-defined test procedures enables the user to simply create fully automated testing. The Proprietary iQ software also allows easy interactive data analysis and plotting. Data can be exported directly into Excel.

Customised workstation that uses proprietary “reflectance” light detection technology to give solubility and MSZW data

The CrystalSCAN system is based on HEL's parallel synthesis platform, PolyBLOCK, which is a versatile multi-zone reaction block, offered as 4 or 8 reactor independent temperature controlled zones, with independent stirring.

Basic Function

CrystalSCAN provides automated determination of solubility and super solubility (or MSZW), in 4 to 8 stirred samples, over a range of concentrations.

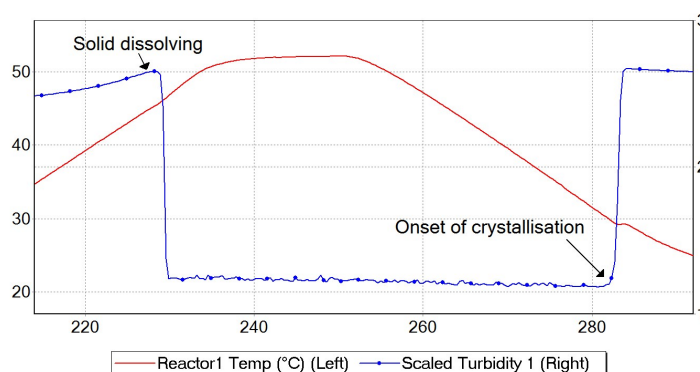
The system will automatically:

- ◆ Heat / cool each sample independently
- ◆ Detect dissolution / crystallisation

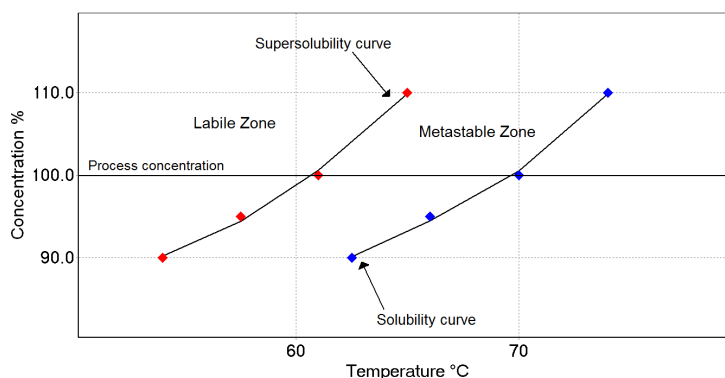
After each cycle, CrystalSCAN can add solvent /anti solvent of choice, diluting each sample (independently). This gives solubility / MSZW data over a range of concentrations.

Raw temperature and turbidity data is displayed graphically as the experiment proceeds. Off line data analysis is possible either by importing the data into Excel or through HEL's proprietary iQ software. With iQ, interactive data analysis is possible which ultimately produces a complete MSZW plot.

Turbidity and temperature data



MSZW Plot generated automatically in CrystalSCAN





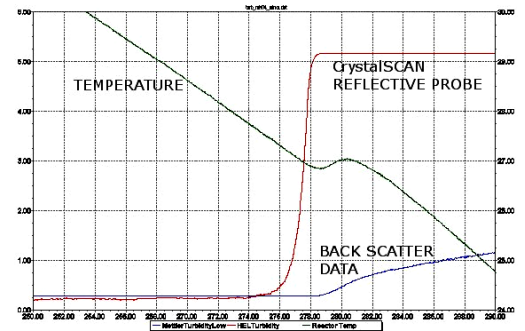
Detection Methodology

HEL's proprietary "turbidity" sensing systems uses a light source which is reflected off a "mirror" immersed in the sample.

Changes in the signal accurately and reliably correspond with the disappearance and appearance of solids.



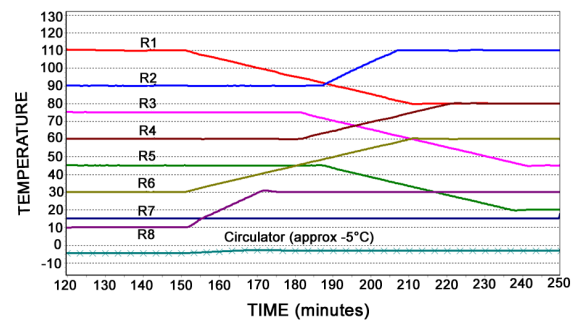
The reflectance technique, suitable optimised, gives earlier and reliable detection of solids—more sensitive than the human eye.



Temperature Control

Sample temperature from -80°C to $+250^{\circ}\text{C}$ are possible. Each sample is independently heated / cooled — at any time; a temperature difference of over 100°C between samples can be handled.

Measurement can be made in both clear and dark / coloured solutions — without any alternation in set-up being necessary.



Process Screening



LOW VOLUME DISPOSABLE VIALS:

Test samples below 2ml, using standard vials with push on sealing caps (agitation with magnetic fleas)



CUSTOM VIALS:

Test samples below 5ml, with a working volume of around 20ml, plus top condensing section. Mechanical stirring using the turbidity probe as stirrer shaft.

Process Development



Sample sizes up to 100ml, mechanically stirred. Available for the 4 or 8 reactor block version (left).



Sample sizes up to 350ml, mechanically stirred. Available for the 4 reactor version only (right).

Agitation

For sample sizes above 5ml, suspended mechanical stirrers are used, giving **reliable mixing without breaking crystals**



Sample Dilution

Precision syringe pumps with multiple outlets and auto-refill capability, allow independent dilution of samples in steps. Several pumps can be controlled.



pH & Other

CrystalSCAN can be expanded to include measurement and control of pH as well as other sensors and detection methodologies (PAT, spectroscopy, etc.)



For further information visit <http://www.helgroup.com>

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