

Crystallization Studies For Polymorph Screening



Crystallization studies for polymorph screening can take a long time and may be difficult to conduct. Working with researchers in the field, SP has developed EXALT™, a toolkit to help researchers conduct evaporative crystallization studies, whether polymorph screening or searching for metastable and stable forms.

EXALT enables a wide range of solvents to be evaporated all at the same time, and at the same slow rate. Therefore, DCM and Toluene can be placed in the same system and evaporated such that both samples dry at the same time. EXALT may be used for solvents with a boiling point of 40°C to 165°C – DCM to DMAc. The evaporation time can be controlled to range from 6 hours to 72 hours, or more, as required for most solvents in this boiling point range. The system can deliver polymorphs of a chemical at the same time, in a controlled reproducible way.

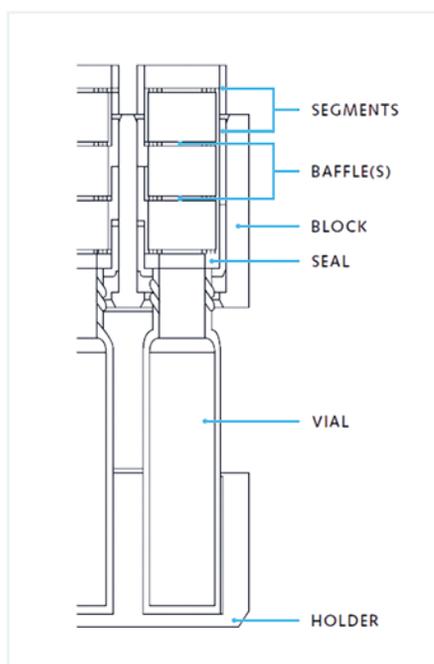


Ibuprofen crystallized from acetone

EXALT uses a special holder for vials which allows a selection of baffles to be placed on top of the vial to slow the evaporation rate of the volatile solvents. Size and number of baffles are selected to be most restrictive for the most volatile solvents, and least restrictive to the less volatile solvents, or in some cases are not used at all.

The holder is then placed in an SP Genevac HT Series 3 and 3i, or EZ-2 4.0 evaporators which then cycle the samples at atmosphere and at a slightly reduced pressure for the duration of the process.

The toolkit is entirely modular, enabling the researcher to create their own baffle configurations to achieve the desired evaporation time profile for a set of solvents. Increasing the evaporation temperature can speed up the evaporation rate, however, care must be taken not to exceed the boiling point of the most volatile solvent present.



EXALT Toolkit

Using the toolkit enables researchers to build a suitable array of baffles so that a wide range of solvents can be evaporated at the same slow rate, all at the same time.

This provides the ultimate in flexibility for experimental design. The software on the SP Genevac HT Series 3 and 3i and EZ-2 4.0 evaporators allows the pressure drop from atmosphere, the time at atmospheric pressure and the time at reduced pressure to be specified.



Requirements

EXALT currently supports only 15mm diameter x 45mm high vials, also known as 1-dram vials, and accepts up to 24 vials per holder. SP Genevac HT Series 3 and 3i evaporators, and the latest version of SP Genevac software enabled, is also required.

Applications

EXALT has been shown to be a useful tool for confirmation of stable forms, to create crystals from amorphous forms, to screen solvents for crystal production including production of seed crystals, and in co-crystal screening.



SP Genevac HT Series 3i



SP Genevac EZ-2 4.0

