

Automated Imaging

As crystals may appear at any time in a crystallization droplet, frequently checking of wells is required for discovering them as early as possible after their appearance. However, crystallization in 96 well format plates implies a significant number of wells which have to be checked frequently. Therefore, fully automated imaging systems in combination with plate hotels (incubators) conquered the market. Key features for imaging systems are: Reliability, speed, user friendliness and image quality. Here we introduce a unique Plate Hotel System “SpectroQ”, since it combines highly advanced imaging with the optional feature to measure DLS in plates.

96 well plates can be imaged in about 1 min. in high quality bright light illumination. The user friendliness of the interface makes exploration of the image data easy and very comfortable.



Crystal Identification based on fluorescence allows to distinguish salt from protein crystals *in situ*. This can be done fully automated as well, simply by changing the illumination spectrum to near UV-light. This method is also used for identification of initial hits in order to decide which conditions should be selected for optimization.

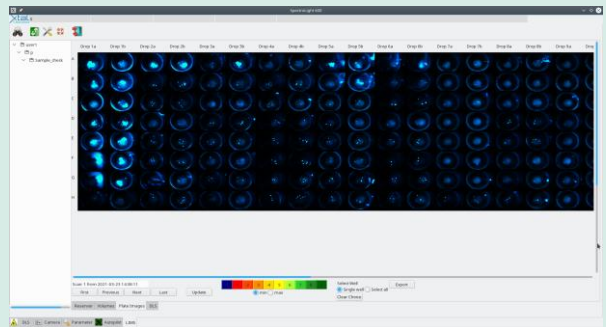
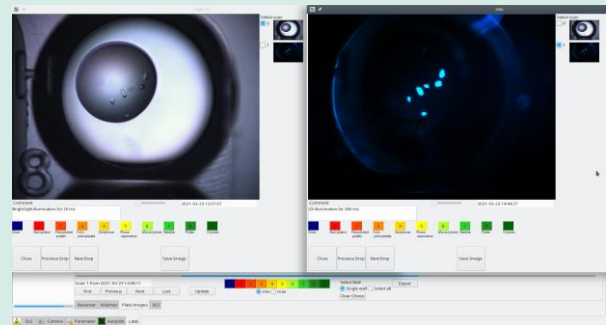
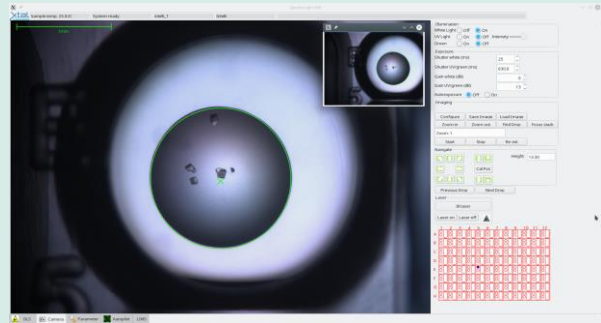


Image Comparisons of Images take with bright and UV-light illumination help to recognize protein crystals even when they laying among salt crystals.



Automated Drop Centering is used when the well size exceeds the volume of the droplet significantly. If the drop is not placed well centered, it will be fully visible only at lower magnification, but partially at higher magnification. In order to prevent this, an automated drop finder is available that recognizes the drop and saves the off-set for each well for later imaging applications.



Auto exposure is a feature that supports a reproducible image quality in terms of brightness at all magnifications without manual adjustments.

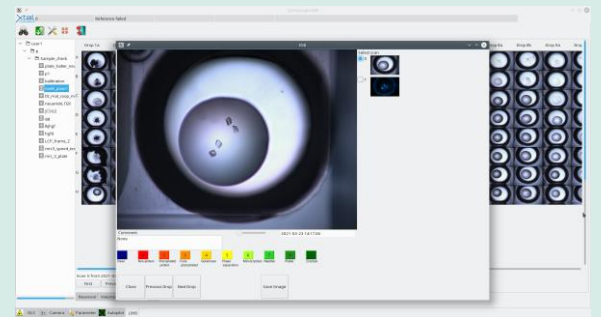
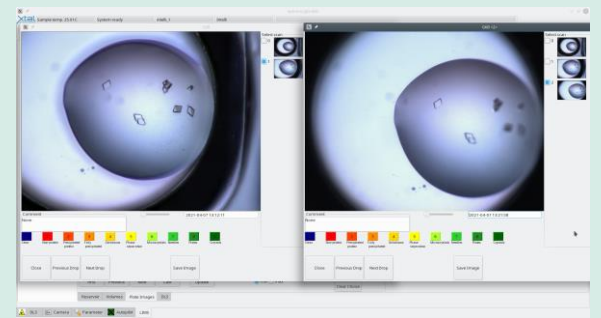


Image Focus stack since many plate designs possess lense-shaped wells, crystals might be located at different heights. Some large crystals or disadvantageous bent plates can be even imaged with sharpness when applying an image focus stacking function.

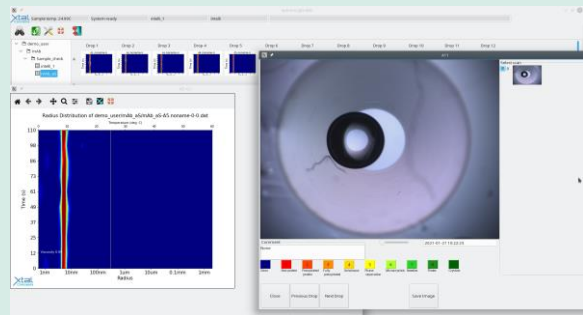


Optical Quality is of high significance when objects in the μm range should be scored. Recognizing the crystalline property of an object that small requires highest quality optical systems which is available in SpectroQ.



Unmatched Versatileness

SpectroQ is far more than a fully automated imaging system since it combines three major function: plate storage, imaging and dynamic light scattering in one unit. The successrate of crystallization of a sample can be significantly increased when exploiting the full application potential of SpectroQ. Please also see dynamic light scattering applications of SpectroQ.



Data Aquisition SQL-Database

All data will be stored in an internal SQL-data base. The data model provides easy acces, fast export and a temporal order even for large amounts of image and DLS data. The system can be integrated into existing it-infrastructures for data back-ups and centralized data management.

