

XALOC, the MX beamline at ALBA synchrotron: Current status and perspectives

Fernando Gil-Ortiz, Xavier Carpena, Barbara M. Calisto, Isidro Crespo, José María Álvarez, Jordi S. Andreu, Ricardo Valcarcel, Albert Miret, José Avila, Jorge Villanueva, Judith Juanhuix, Roeland Boer

Alba Synchrotron, c/ de la Llum 2, 08290 Cerdanyola del Vallès, Barcelona, Spain.

rboer@cells.es

XALOC is a tunable MX beamline, in user operation since 2012, located at the 3rd generation synchrotron ALBA (Barcelona). XALOC has been designed to deal with automatable X-ray diffraction experiments of micrometer-sized crystals, including a variety of crystal sizes, unit-cell dimensions and crystals with high mosaic spread and/or poor diffraction. The aim for a reliable all-in-one beamline is equaled by the aim to maximize ease-of-use and automatization. Mail-in data collection is now in routine operation and dewar transport expenses are covered for users from Spain and abroad. To achieve a high-throughput MX beamline, we have implemented a new double gripper at the CATS sample changer that allows sample interchange in less than 20 seconds. Besides, an improvement in the CATS dewar allows to allocate up to 6 Unipucks (96 samples). EMBL/ESRF pucks are also acceptable with a capacity of 30 samples. In addition, MXCube and ISPyB software platforms for data collection and sample tracking/experiment reporting are routinely used at the beamline, allowing automated centering and the possibility to download the results obtained with the EDNA automated data processing pipeline through a web browser (<https://ispyb.cells.es/>). The beamline allows “in-situ” diffraction and serial crystallography experiments have been carried out successfully. XALOC is continuously open to new proposals providing beamtime within a few weeks. The latest updates and efforts and future developments on automation will be presented

Keywords: Structural biology, X-ray diffraction, Synchrotron radiation