

GI-MS46-P02 | A NON-AMBIENT SINGLE CRYSTAL X-RAY DIFFRACTION BEAMLINE AT TAIWAN PHOTON SOURCE

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Structural information are elementary knowledge of molecule but always be the key to understand physical and chemical properties. However, the in-house X-ray diffractometer is not sufficient for many new materials that only can get tiny crystal, and also are inconvenient for non-ambient research requests from Taiwan's scientists.

A dedicated small-molecule single-crystal X-ray diffraction beamline is phase-II beamline at TPS (Taiwan Photon Source). A Cryogenic Tapered Undulator with period length 18 mm (CTU18) will be used as X-ray source to generate high brilliance X-ray. The energy of this beam line is tunable which is depend on different experiments within 8-35 KeV range. Monochromatic mode and pink beam mode both will be available at this beamline. The monochromatic beam mode will be selected by a "Double Crystal Monochromator" (DCM) and the pink beam mode (with bandwidth $\sim 3-5\%$) can be selected. A Kirkpatrick-Baez (KB) mirror will be used to focus the beam size to few microns in diameter at sample position. The end-station will be installed with a ARINAX MD3-up four-circle Kappa diffractometer for data collection.

This beamline is designed for advanced crystallographic purposes, which are not only dedicated to hard structure determination, but also for structure at non-ambient conditions . Those techniques will include (1) Micro-crystal and large porous structure determination (2) Extreme condition structural studies (3) Photo-induced excited state (4) Time-resolved dynamic structural studies via Laue diffraction technique. (5) charge density analysis (6) Resonance diffraction. These technic details of this beamline will be shown in this presentation .