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MS/XPD: The SESAME X-ray powder diffraction beamline for Materials Science and Environmental applications

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X-ray diffraction (XRD) beamlines are often high-priority facilities due to their broad applications across diverse fields, including materials science, biology, pharmacology, and cultural heritage. The X-ray powder diffraction (XRPD) technique, in particular, is widely used for material phase identification, quantitative phase analysis, microstructural analysis, and kinetic studies. The MS/XPD beamline at SESAME Synchrotron; which started its operational phase in December 2020; is dedicated to XRPD and was the third beamline to open at SESAME.

It is equipped with a two-circle diffractometer and a PILATUS 300K area detector, generously donated by DECTRIS. The beamline covers an energy range of 8-25 keV, achieving an estimated flux of 10^{13} photons/s at 10 keV. This talk will provide an overview of the MS/XPD beamline's technical specifications, along with selected research examples highlighting some applications in materials science and environmental studies (e.g., water harvesting, energy storage and CO2 storage).

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