GI-MS46-05 | FACILITY UPGRADES AT THE AUSTRALIAN SYNCHROTRON: EXTENDING THE POWDER DIFFRACTION CAPABILITIES

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Here we report on the recent upgrades to the existing Powder Diffraction (PD) beamline, and planned Advanced Diffraction and Scattering (ADS) beamline at the Australian Synchrotron. The PD beamline has been operational since 2007 and is optimised for in situ measurements carried out between 8-22 keV. In late 2018, the vertical collimating mirror (VCM) and double crystal monochromator (DCM) were upgraded to increase the flux and stability, and address end-of-life issues. The VCM was replaced with a substrate with both flat and toroid Rh-coated mirror stripes to increase flux following coating degradation and permit horizontal focussing using the toroid. The existing DCM Si(111) pair was replaced and the Si(311) crystal pair was removed to increase stiffness in the crystal cage. Replacement of the vertically focusing mirror will occur in late 2019. A new ADS beamline is currently being built to complement the PD beamline and extend Australia's research infrastructure in high energy X-ray diffraction and imaging. ADS will have a superconducting multipole wiggle (30-150 keV) and two simultaneously operating end stations. A wide range of techniques will be possible including: 2D powder diffraction, energy dispersive diffraction, tomography, total scattering, and white/pink beam Laue diffraction.