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Water-cooled Double Multilayer Monochromator for the BioSAXS beamline at the Australian Synchrotron

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The Multilayer Monochromator for the BioSAXS beamline at the Australian Synchrotron is intended to provide high monochromatic flux into the experimental station. A vertical bounce arrangement using a single Ru/B4C multilayer stripe will deliver a flux of up to 5 x 10^14 photons/s with a 1% bandwidth off an undulator insertion device. A side clamped water-cooled solution is used to dissipate the heat load, this arrangement was chosen to improve the instrument stability as the required cooling performance is achieved without the use of liquid nitrogen.

We present the design, manufacturing, and testing factory efforts to deliver a high-performance Multilayer Monochromator for the BioSAXS beamline. The cooling analysis, motion, and stability testing, as well as the multilayer design and simulation performed in conjunction with the optic supplier, and multilayer metrology performed on BL11 beamline at ALBA Synchrotron show the instrument and the BioSAXS beamline is ready to take beam enhancing the SAXS capabilities at the Australian Synchrotron.

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No

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