Upgrade of the 1-ID Beamline for APS-U

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Abstract

We propose an upgrade to the 1-ID beamline, to take advantage of the enhanced MBA capabilities in the high-energy x-ray regime. Strategic investments will allow the highly successful and in-demand programs at 1-ID to be improved, as well as providing a new capability to study surfaces and buried interfaces. Improvements of source characteristics and optics will enable spatial resolution improvements beyond 1 micron towards the ~100 nm level. Brilliance gains will improve temporal resolutions to enable *in situ* monitoring of processing conditions including welding, catalysis, electrochemistry, energy storage and production, surface treatments, and additive manufacturing.