Scanning the night away – stage upgrade at the XFM beamline

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X-ray Fluorescence Microscopy uses a focussed beam and an energy resolving detector to map trace metals at exquisite sensitivity and resolution for a broad diversity of research programmes. Our possession of the Maia detector enables us to acquire high-sensitivity data at incredible pixel rates, and this in turn has enabled higher-dimensional techniques, such as fluorescence tomography, XANES imaging, and XANES-tomography. The beamline has solid impact, punching well above its weight.

From the beamline's inception (late 2008) up to May 2015, beamline data acquisition was limited by a range of mechanical and controls parameters, including stage resolution, speed, and acceleration. We have recently completed phase 1 of a project to bring fast scanning to the XFM beamline. The new build substantially improves data acquisition rates and accuracy, and frees limitations on the measurement parameter-space, enabling a range of entirely new investigations. Here we report on the design, build, and testing of the updated stages, and discuss a range of further improvements that will make this an optimised workhorse of the XFM beamline. We welcome feedback about the future capabilities of the equipment from the user community.

Keywords

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