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Mirror, mirror in the vacuum tank; an MX2 optics upgrade

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The micro-crystallography beamline, MX2, depends on three mirror elements for conditioning and focussing the beam at the sample position. One of these, the Microfocussing Horizontally Focussing Mirror (MHFM) is showing signs of beam damage. A likely source of this damage is the high-voltage piezo bender bimorph system used to shape the mirror.

This manifests as significant structure in the beam, as well as greatly reduced transmitted flux from one of the three substrates that coat the mirror surface (Pt, the other two are Si, and Rh). All three substrates, however, are showing signs of staining and distortion.

Further damage to the Rh-stripe, or a failure of the bimorph, would render the beamline inoperable as a microfocus instrument.

The planned upgrade will greatly mitigate this risk, simplify beam conditioning and setup, and bring beam steering closer to the sample position. Additionally, these changes will allow for a smaller and hotter beam.

Are you a student?

No

Do you wish to take part in the Student Poster Slam?

No

Are you an ECR? (<5 yrs since PhD/Masters)

No

What is your gender?

Male

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