

Lessons learned from K-B mirror based microprobes

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Arguably NSLS-II will provide some of the world's best x-ray sources for microfocused experiments. A number of technological choices exist for focusing x-rays to micron and sub-micron spatial resolutions including diffractive, refractive, and reflective optics and it's likely there will be beamlines at NSLS-II utilizing all three types. Reflective mirror optics arranged in a Kirkpatrick-Baez (KB) geometry are the most commonly utilized for hard x-ray microprobe instruments and while they have lagged in achievable spatial resolutions in comparison to Fresnel zone plates and have a reputation for being difficult to align, they have exceptional efficiency, providing the highest photon fluxes to samples. They also are achromatic which means that a single set of optics can be utilized over a broad range of energies and they are excellent choices for spectroscopic analysis. In this talk we will review lessons learned from our design and operation of these optics at our hard x-ray microprobes at the NSLS and the APS, discuss some of the scientific applications of these devices particularly in the life sciences, and review our plans for implementing these optics on the KB branch of the SRX sector at NSLS-II, one of the six project beamlines being designed as part of the initial project scope.