

# Performance of the NSLS-II IXS beamline and the study of fast dynamics in soft matter systems at mesoscale\*

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The ultrahigh resolution inelastic x-ray scattering (IXS) beamline at NSLS-II is designed to achieve submeV resolution at a moderate energy of  $\sim 9$  keV for IXS experiments with high momentum resolution and high spectral contrast, offering unique capabilities for the study of fast dynamics in exotic material systems ranging from soft matter, colloids, and biological materials with complexity and inhomogeneity in mesoscopic length scales, to systems in confined geometries such as surfaces, interfaces and in extreme pressure and temperature [1]. The key instrument is a novel spectrometer with a new type of analyzer optics based on the angular dispersion principle in highly asymmetric Bragg back reflection [2], coupled with collimating optics [3] to achieve comparable angular acceptance of the scattered photons as the spherical backscattering analyzer used in existing IXS facilities. In this presentation, details of the design, principle of operation and performance in recent experiments on soft matter systems [4] will be presented and discussed.

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## References

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