

## **Improved Ultraviolet Metrology Capabilities at SURF III**

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A new beamline has been installed at the NIST SURF III storage ring that will provide continuously tunable monochromatic radiation over the range from 2 nm to 400 nm. The key element of this facility is a novel monochromator originally designed at the US Naval Research Laboratory that provides for either a single or double grating optical path with angle of incidence variable from grazing to normal. The flexible design of the monochromator allows operation at the blaze angle with very high throughput in the whole wavelength range with only two gratings. This instrument was formerly installed at the National Synchrotron Light Source I where it was used to perform many radiometric calibrations, including those for instruments on several NASA missions.

This new beamline will give us the capability to perform a radiometric scale realization based on the SI units through the use of an absolute cryogenic electrical substitution radiometer with a relative standard uncertainty below 1 % over the entire range from 2 nm to 400 nm. This beamline will complement the NASA Spectrometer Calibration Facility on an adjacent beamline which provides undispersed white synchrotron radiation used to calibrate a variety of EUV spectrometric instruments for space studies and other applications.