The Synchrotron Ultraviolet Radiation Facility, SURF III, is a compact storage ring operated by the National Institute of Standards and Technology NIST. SURF is a stable source of synchrotron radiation from the infrared to the soft x-ray spectral regions, operated mainly as a light source for radiometry and applied research. Currently several calibration services are provided at SURF beamlines: ultraviolet (UV) detector calibrations, extreme ultraviolet (EUV) detector calibrations and measurements of optical properties in the UV and EUV. One beamline (BL-2) is open to customers for calibration of photodetector packages based on the calculability of synchrotron radiation. Another (BL-3) is currently under development to enhance our capabilities for source-based radiometry by reducing the uncertainty for the electron beam current determination. It will also provide additional experimental stations for the calibration of filtered detector packages and standard light sources.

In addition to the magnet upgrade for SURF III, other key systems have been modified. For example, we can now operate with much higher RF power due to improvements in our RF transport line, and a recently installed high-power RF filter that isolates amplifier harmonics from the cavity. Also, a new pumping setup has also led to a better operational vacuum. All of these improvements translate into higher operational energies with better beam lifetime and stability.

The operational stability of the beam has improved due to the use of a narrow-band fuzz source instead of the previous white-noise fuzz source. The beam size is constantly monitored and locked to a user-defined set point by feeding back on the fuzz frequency. This has led to a beam stability improvement of more than 30 dB over the previous setup. The obtainable beam current was also improved in the course of the upgrade. Optimization of injection procedures has increased the average beam current to $650 \pm 25$ mA from $120 \text{ mA} \pm 30$ mA. This was accomplished using a variety of techniques and improvements such as sweeping the RF frequency during injection to minimize the effects of higher-order cavity resonances.

The control and management systems used in SURF III have also been upgraded to improve system performance. Currently we have full computer control of the storage ring operational parameters. These data and injection parameters are monitored and logged continuously by computer during normal operation and alarms are generated automatically when a problem occurs. The level of stability and brightness already obtained with SURF III opens the door to a wide range of applications such as IR microscopy. We are also planning on future improvements to increase our beam current and improve beam stability at low energies.

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Submitting author: U. Arp, e-mail: uwe.arp@nist.gov