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Results from Three Extreme Ultraviolet Spectrometers for Impurity Monitoring on NSTX-U[1] M.E. WELLER, P. BEIERSDORFER, V.A. SOUKHANOVSKII, E.W. MAGEE, F. SCOTTI, LLNL, M.L. REINKE, ORNL — The National Spherical Torus Experiment – Upgrade (NSTX-U) has been performing plasma operations for over a year and one of the focuses of study has been to monitor the levels of impurities emitting from plasma facing components (PFC). To monitor the levels of impurities three high resolution flat field grazing incident extreme ultraviolet (EUV) spectrometers capable of time resolution below 10 ms have been implemented on NSTX-U. The spectrometers are dubbed the X-ray and Extreme Ultraviolet Spectrometer (XEUS, 8 – 70 Å), the Metal Monitor and Lithium Spectrometer Assembly (MonaLisa, 50 – 220 Å), and the Long-Wavelength and Extreme Ultraviolet Spectrometer (LoWEUS, 190 – 440 Å). Confirmed lines measured by the spectrometers emit from He, Li, B, C, O, Fe, and Ni. Results of trends of various lines and line ratios measured are presented, including the Lyman-α ($2p \rightarrow 1s$) transitions of O VIII at 18.9 Å, C VI at 33.7 Å, B V at 48.6 Å, Li III at 134.9 Å, and He II at 303.8 Å. Future plans include utilizing high-Z PFCs made of molybdenum and tungsten and also implementing a new laser blow-off (LBO) system.

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