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Micro-Faraday Cups for Low Energy Ion Detection[1] REGIS JOHN, CUYLER BEATTY, DAVID CARON, Department of Physics and Astronomy, West Virginia University, Morgantown, WV 26501, USA, AMY KEESEE, REED DANNAR, Department of Physics and Astronomy, University of New Hampshire, Durham, NH 03824, USA, DEREK S. THOMPSON, Phase Four, Inc., El Segundo, CA 90245, USA, GREG WAGNER, STEVE ELLISON, Advanced Research Corporation, White Bear Lake, MN 55110, USA, EARL SCIME, Department of Physics and Astronomy, West Virginia University, Morgantown, WV 26501, USA — We are developing an in-situ micro-plasma spectrometer for low energy ions in the plasma edge that requires modest resources and is easily replaced. Ions enter microscopic channels and are deflected based on their energy-per-charge ratio. Ten channels operate in parallel to increase the signal-to-noise ratio of the instrument. Because the ions of interest are typically low energy, less than 100 eV, conventional solid state detectors have too high an energy threshold and conventional microchannel plate detectors require too large a pre-acceleration potential. The key advance in the instrument described here is an integrated micro-Faraday cup structure designed to capture and record single ions. We will present initial measurements from the micro-spectrometer.

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