Abstract Submitted
for the MAS15 Meeting of
The American Physical Society

Designed and early testing results of a microscale plasma spectrometer, for use in swarming multi-spacecraft measurements[1] DREW ELLIOTT, AMY KEESEEE, EARL SCIME, West Virginia University, MATT DUGAS, STEVE ELLISON, JOE TERSTEEG, Advanced Research Corporation, ALEXANDER BARRIE, CRAIG POLLOCK, AMY RAGER, Goddard Space Flight Center — Advanced lithographic techniques are used to design and build a plasma spectrometer which requires lower voltages and has a much smaller volume than typical retarding field energy analyzers. The total volume of the completed device is slightly larger than 1 cm^3. The designed measurement range is 2-20 eV/e. 100 V will be the maximum voltage supply needed for the device which is 1-3 orders of magnitude below that of traditional top hat retarding field energy analyzers. The required power for the energy analyzer itself is designed to be in the microwatt range, making it 6-7 orders of magnitude below that of similar state of the art devices, although detector and signal processing power requirements will likely be on the order of milliwatts. Early results from electron beam tests on the collimator and the energy analyzer are presented, and both are shown to behave very similar to predictive values simulated through SIMION^{TM}.

[1]This work is supported by NASA grant NNX14AJ36G

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Date submitted: 21 Sep 2015 Electronic form version 1.4