

Recent Progress Made on Spacecraft Atmosphere Monitor's Engineering Model

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We report on the progress made in developing the engineering model of the Spacecraft Atmosphere Monitor (S.A.M.). S.A.M. is a technology demonstration of a miniature mass spectrometer coupled with micro-electro-mechanical system (MEMS) gas chromatography (GC) planned to launch in February 2018. Its core functions are: i) continuous reporting at 2s intervals on the concentrations of the major atmospheric constituents (CH₄, H₂O, N₂, O₂, and CO₂) and ii) once a day reporting on the trace volatile organic compounds (VOC) at ppm to ppb levels of 40+ species relevant for astronaut health. Activities to be addressed encompass issues in building the engineering model of S.A.M. such are fitting into the 9.5"x8.75"x7.5" casing, achieving the 9.5kg of mass and 45W of average power consumption.