Miniature Vacuum Pumps for Portable Mass Spectrometry

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For a number of years, Creare has been developing high vacuum turbo molecular pumps for specialized space applications specifically for the low atmospheric pressure on Mars. Two Creare turbo pumps are currently operating on the SAM instrument on the Curiosity rover, and a smaller pump is being space qualified for the MOMA instrument on the ExoMars mission to be launched by ESA in 2018. These pumps are extremely compact and consume very little power while maintaining high pumping performance. To back the turbo pumps, Creare is developing a miniature scroll roughing pump resulting in complete pumping system for terrestrial applications and much smaller than current commercially available systems. In collaboration with Purdue university, Creare has recently tested this pumping system on a portable mass spectrometry systems. The poster will present a system description and performance data as well as comparisons of our pumping system with commercially available systems.