Scientific Instruments on Martian Moons eXploration (MMX)

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Mars has two satellites, Phobos and Deimos, and the origin of these satellites are still controversial. The Japan Aerospace Exploration Agency (JAXA) is planning the Martian Moon eXploration (MMX) mission, which is a sample-return mission for Phobos or Deimos to reveal the origins of these two satellites. The scientific instruments onboard the MMX spacecraft are a telescopic camera (TENGOO), a multiband wide-angle camera (OROCHI), an infrared spectral imager (MacrOmega), a gamma-ray spectrometer (MEGANE), a laser altimeter (LIDAR), an ion mass spectrum analyzer (MSA) and a sampler. MMX will enter a quasi-satellite orbit around a moon after the arrival at the Martian sphere We spend ~1 year to investigate the moon’ s surface using the scientific instruments at the quasi-satellite orbit to select the landing sites. The global observation of the moon is also important for characterization of the returned sample. In the landing phase, we will use the scientific instruments to observe the area near the sampling site. The MMX Rover, which is a small rover for investigating the surface of the moon, has visible cameras, thermal infrared sensors and a Raman spectrometer. This rover will give us the information of the surface of the moon. In this presentation, we introduce the current status of the scientific instruments onboard the MMX spacecraft and the operation plan.

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