

## Mercury Imaging Camera proposed for BepiColombo/MMO

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Development of an imaging camera has been made for the BepiColombo/MMO spacecraft. The imaging camera (Mercury Imaging Camera: MIC) has two different observation objectives in the visible wave range; Mercury's Na/K atmosphere and surface. In the study of the atmosphere, its structure and gas release/loss processes will be investigated by 2D imaging for the polar rim regions. In the study of the surface, subtle tectonic features and photometric properties of the surface will be investigated using various viewing geometries and a stereo imaging technique.

The design of the camera has been examined in order to observe both targets with one packaged unit, that is, the optics is designed to be one common aperture/object lens section and separate lens sections for the atmosphere imaging system (MIC-A) and surface imaging system (MIC-S). Each imaging system has an electronically-cooled CCD sensor. At MIC-A, the spectroscopic imaging is made in the wave range of 590 - 770nm and with FOV of more than 8degrees. At MIC-S, the 1D imaging is made in the wave range of 700 - 750nm (T.B.R) and with FOV of more than 3degrees. The 2D image is to be obtained using a spin rotation of MMO. The total package of the camera has one common electronics section.

The following items have been particularly examined for realizing the MIC system.

1) Selection of radiation-resistant optical lens and examination of measures against hard radiation for electronic devices (especially CCD and CPU)

2) Flaring level of optical system: The amount of flaring, which must be occurred because of direct or indirect (reflection at the surface of MMO) incidence of the reflection light from Mercury's day-side disk and/or sun, is a quite important factor which determines the minimum detectable level of the atmospheric emission. Both a theoretical calculation and empirical tests using a model optics are planned to evaluate the flaring level.

The detailed design and latest status of MIC will be shown in the presentation.