

# Scientific Programme

First day - 3 June 2009

8:30 &ndash; 9:15 Registration

9:15 &ndash; 9:30 Welcome / Logistics / Organisation of the workshop

The missions

9:30-10:00 S. C. Solomon et al.: MESSENGER's first and second flybys of Mercury: a scientific overview.

10:00-10:30 J. Benkhoff et al.: Mission status and first ideas on MPO science operations.

Coffee break 10:30-10:45

Mercury's crust

10:45-11:15 B.W. Denevi et al.: A global perspective from MESSENGER and MARINER 10 on the evolution of Mercury's crust.

11:15-11:45 D.A. Rothery: The origin of Mercury's crust and the extent of volcanism: recent insights and implications for UV-VIS-IR and X-Ray spectroscopy.

11:45-12:15 S. Brown and L.T. Elkins-Tanton: Hypotheses for compositions of Mercury's ancient crust and implications for surface spectra.

Lunch 12:15-13:45

Interaction processes (cratering, space weathering)

13:45-14:15 L.M. Prockter et al.: Impact cratering on Mercury: historical perspective and new views from MESSENGER.

14:15-14:45 G. Cremonese et al.: New method for dating planetary surfaces. Application to the Moon and Mercury.

14:45-15:15 O.S. Barnouin-Jha et al.: Constraints from cratering physics on vertical layering and melt generation at Mercurian craters.

Coffee break 15:30-15:45

15:45-16:15 D.L. Domingue et al.: Processes affecting Mercury's spectrum and color: space weathering.

Exosphere

16:15-16:35 S.A.Livi et al.: STROFIO: exospheric sampling of Mercury's surface composition.

16:35-16:55 V. Mangano et al.: The surface of Mercury investigated via its exosphere

16:55-17:15 M. Blecka: Influence on composition of the exosphere of Mercury on IR radiance spectra – The results of numerical simulations.

Composition. Reviews and perspectives -I

17:15-17:45 D.T. Blewett et al.: The iron content of Mercury's surface: a review of the evidence.

17:45-18:15 A.L. Sprague et al.: Thermal infrared spectroscopy of Mercury: a perspective of search and discovery.

Poster session

18:15-18:45

Ice breaker

Second day - 4 June 2009

Composition. Reviews and perspectives -II

8:30-9:00 E.A. Rhodes: Measurement of Mercury surface abundances of Fe and K relative to Si from MESSENGER Gamma-Ray spectrometer data from the first two flybys.

9:00-9:30 G.M. Holsclaw et al.: Clues to the mineralogical composition of Mercury from MESSENGER spectroscopy.

9:30-10:00 R.W.H. Kozlowski et al.: Near infrared ground based telescopic observations of Mercury.

10:00-10:20 M.A. Riner et al.: Spectra of opaque oxides: reconciling low silicate FeO and high oxide abundances on Mercury.

Coffee break 10:20-10:30

10:30-10:50 L.T. Elkins-Tanton and S. Brown: A mechanism for spreading non-silicate iron- titanium oxides on the Mercurian surface.

10:50-11:10 C.M. Ernst et al.: Exposure of spectrally distinct material by impact craters on Mercury: implications for buried plains material.

11:10-11:40 N.R. Izenberg et al.: Resolved ultraviolet to infrared reflectance spectroscopy of Mercury from the first two MESSENGER flybys.

Laboratory work

11:40-12:10 J. Helbert et al. Laboratory activities in support of the Mercury exploration.

12:10-12:30 S. Fonti et al.: Laboratory emission measurements for the interpretation of Mercury surface spectra.

lunch 12:30-14:00

14:00-14:30 S. Sasaki and T. Hiroi: Space weathering on Mercury: weathering of plagioclase and impact mixing of regolith.

14:30-15:00 G. Strazzulla and G.A. Baratta: Laboratory simulation of space weathering effects.

15:00-15:20 L.V. Moroz et al.: Mercury analogue materials: reflectance spectroscopy and space weathering simulations.

Coffee break 15:20-15:30

Data handling and Data processing

15:30-16:00 S. Erard: Data handling and processing technics adapted to Mercury surface.

16:00-16:20 M. D'Amore et al.: Compositional units along the M1 and M2 MASCS ground track from a Principal Component Analysis.

16:20-16:40 M.C. DeSanctis et al.: Methods for classification of VIHI (Visible and Infrared Hyperspectral Imager) data.

16:40-17:00 L. Pompilio et al.: The EGO approach to the interpretation of spectra from Mercury

17:00-17:20 A. Maturilli et al.: Structure of the Berlin Emissivity Database (BED).

17:20-17:40 A. Frigeri: The digital geologic map of Mercury from the USGS Atlas of Mercury

Poster session

17:40-18:10

Social dinner

Third day - 5 June 2009

Modelling (spectroscopic and thermal)

8:30-9:00 D.L. Domingue et al.: The photometric properties of Mercury's surface: implications for color and spectral interpretations.

9:00-9:30 J. Warell et al.: Mercury's surface mineralogy and chemistry: clues from reflectance spectroscopy modelling.

9:30-10:00 M. Delbo: Treatment of thermal data.

10:00-10:20 M.T. Capria: Mercury surface temperature distribution.

Coffee break 10:20-10:30

10:30 Roundtable discussion \*

Dedicated to establish integrated strategies for spectral data analysis and interpretation in the UV-VIS-NIR and MIR, as well as data handling and mapping.

Aimed at discussing topics emerged during the workshop; e.g.: identifying the most critical topics, pointing out the synergies for optimal data acquisition and interpretation, defining targets for detailed observations, etc., also exploring the effectiveness of the formation of working groups on specific topics.

Example of topics:

1 - Spectroscopy for surface composition: preprocessing, calibration, temperature/spectral signal separation, most appropriate methods of analysis, required laboratory experiments, integration of spectroscopic measurements with other observations (e.g., exospheric emissions, plasma ion measurements) pertinent to surface composition, etc.

2 - Data acquisition, handling, archiving, data fusion and mapping (planning future activities, etc.)

3 - What laboratory work we really need to analyse data from the two missions.

Redaction of a white paper

Compilation of a document on the roundtable results, for publication on a refereed journal.

18:00 Workshop Conclusions

\* lunch break 12:30

## Posters

The posters will be on display for the duration of the conference.

30 minute poster sessions will be held after the oral sessions on days 1 and 2 of the conference.

P. Borin et al.: New estimate of the micrometeoroids flux on Mercury

F. Capaccioni et al.: Scientific objectives and design of the Visible and Infrared Hyperspectral Imager (VIHI) onboard the Bepi Colombo mission.

F. Capaccioni et al.: The internal calibration unit of the Visible and Infrared Hyperspectral Imager (VIHI) onboard the Bepi Colombo mission.

C. Carli et al.: Analogues for Mercury's surface composition: examples from different terrestrial geologic contexts

M. Massironi et al.: Integrated geological mapping of the Beagle Rupes region.