

Tuesday, March 11, 2008
SPECIAL SESSION: LUNAR SCIENCE: PAST, PRESENT, AND FUTURE I
8:30 a.m. Crystal Ballroom A

Chairs: G. J. Taylor
S. J. Mackwell

- 8:30 a.m. Pahlevan K. * Stevenson D. J.
Equilibration After the Moon-forming Giant Impact [#2500]
We review isotopic evidence that the Earth-Moon system underwent equilibration after the giant impact and discuss the implications for lunar chemistry.
- 8:45 a.m. Shearer C. K. *
Differentiation of the Terrestrial Planets. Past, Present, and Future Perspectives from the Moon [#1814]
The intent of this presentation is to summarize our initial insights into the very early evolution of the Moon, recent appreciation for the complexities of the early differentiation of the Moon, and inadequacies in our current perception of lunar differentiation.
- 9:00 a.m. Longhi J. *
Integrated Modeling of Magma Ocean Crystallization [#2497]
It is now possible to calculate major and trace elements variation simultaneously during magma ocean crystallization such that pressure, temperature, and composition parameters are continuously available to calculate partition coefficients from existing models.
- 9:15 a.m. Norman M. D. *
The Lunar Cataclysm Hypothesis: Status and Prospects [#1126]
Crater density populations point toward an early episode of heavy cratering with conclusions regarding a late bombardment depending critically on the assumed ages of Nectarian and pre-Nectarian age basins.
- 9:30 a.m. Kring D. A. *
Deciphering the Chronology and Implications of Impact Cratering on the Moon: A High Science Priority for Lunar Exploration [#1251]
Outline of science rationale and exploration strategy for determining the impact flux to the Moon and throughout the inner solar system.
- 9:45 a.m. Anbar A. D. *
Astrobiology and Lunar Exploration [#2511]
An overview of astrobiology research facilitated by lunar exploration.
- 10:00 a.m. Jolliff B. L. *
The Composition of the Lunar Crust and Some Unanswered Questions [#2535]
The composition and lithology of the lunar crust is reviewed with a focus on understanding the distribution of materials globally and at depth, and remaining questions.
- 10:15 a.m. Taylor L. A. *
Formation and Evolution of Lunar Regolith [#1346]
On airless bodies such as our Moon, the weathering and erosion processes responsible for the formation and evolution of the regolith are almost entirely a function of meteorite and micro-meteorite impacts. Apollo samples are the basis for our knowledge.

- 10:30 a.m. Lucey P. G. * Taylor G. J.
The Science of the Lunar Poles [#1480]
The lunar poles comprise a microenvironment with unique scientific potential. Their cold surfaces may trap volatiles from sources ranging from comets to giant molecular clouds. Once in the traps, volatiles may undergo interesting chemistry.
- 10:45 a.m. Hiesinger H. * Head J. W. III Wolf U. Neukum G. Jaumann R.
Ages of Mare Basalts on the Lunar Nearside: A Synthesis [#1269]
We present crater size-frequency distribution model ages of lunar mare basalts exposed on the lunar nearside. We address the beginning and duration of lunar volcanism and discuss regional differences in basalt surface ages.
- 11:00 a.m. Anand M. * Terada K.
Timing and Duration of Mare Basalt Magmatism: Constraints from Lunar Samples [#2155]
This abstract reviews our current state of knowledge about mare basalt ages from lunar sample studies.
- 11:15 a.m. Wilson L. * Head J. W. III
Eruption Rates of Mare Lava Flows on the Moon and Implications for Mantle Melt Volumes and Dike Geometries [#1104]
We derive volume eruption rates for lavas flows in the lunar maria and use these to define the ranges of dike geometries for magmas that erupt (and fail to erupt) to the surface. We also describe implications for the amounts of mantle melting.
- 11:30 a.m. Zuber M. T. * Smith D. E. Alkalai L. Lehman D. H. Watkins M. M. GRAIL Team
Outstanding Questions on the Internal Structure and Thermal Evolution of the Moon and Future Prospects from the GRAIL Mission [#1074]
The structure of the lunar interior holds the key to reconstructing the thermal evolution of the Moon. Knowledge of the Moon's internal structure and evolution will be greatly advanced by the Gravity Recovery And Interior Laboratory (GRAIL) mission.