Lunar Mare Basalts: Observations and Analyses

Arai T.  Takeda H.

*Melting Experiment on Ancient Mare Basalt Asuka 881757 [#1314]*

Asuka (A) 881757 is an unbrecciated, coarse-grained mare basalt that crystallized at 3.94 Ga, with very low TiO$_2$. Melting experiments on A881757 were performed to understand the cooling/crystallization history of this new type of basalt, focusing on spinel.

Beck A. R.  Hess P. C.

*The Ilmenite Saturation Surface of High Ti Mare Basalts [#1939]*

We have calculated the ilmenite saturation surface for high Ti mare basaltic glasses and applied it to basalt petrogenesis.

Elkins Tanton L. T.  Van Orman J. A.  Grove T. L.

*Is the Sinking High-Ti Cumulate Hypothesis Sunk? [#1946]*

The physical and petrologic aspects of five high-Ti cumulate overturn models are examined, and only two are found to be possible. Wholesale sinking of late-stage high-Ti lunar cumulates is unlikely.

Shearer C. K.  Borg L.  Ryder G.  Papike J. J.  Nyquist L.

*Deciphering Ages of Impacted Basalts Using a Crystal Chemical-Ion Microprobe Approach. An Example Using the Apollo 17 Group D Basalt [#1851]*

We report on the major and trace element characteristics of a “glass” component in a mare basalt (79001) and speculate on its role in defining the isotopic behavior of this sample.

Hagerty J. J.  Shearer C. K.  Papike J. J.

*Trace Element Variability of the Apollo 14 High-Al Basalts: A Result of Igneous Processes or Sample Size? [#1235]*

Three fragments of aluminous basalt were analyzed via SIMS. Each fragment exhibited a range of bulk incompatible element concentrations. The data from these fragments show an interesting dichotomy in the incompatible-compatible element behavior.

Antonenko I.  Prinos J.

*Stratigraphy of the Schickard Crater Area: Investigations Using Statistical Crater Modeling [#1210]*

Craters from previous work in the Schickard area are compared to a model crater population, and are found to be consistent with a stratigraphic model having two cryptomare layers. Statistically, very few craters are expected to tap deep mare layers.

Pieters C. M.  Head J. W. III

*Extent of Basaltic Volcanism in South Pole-Aitken Basin [#1821]*

In addition to basaltic mare identified within SPA, several older basaltic deposits (cryptomare) are recognized. SPA basalts occur as localized deposits and there is no evidence for extensive volcanism similar to that in basins on the nearside.

Petro N. E.  Gaddis L. R.  Staid M. I.

*Analysis of the Oppenheimer Pyroclastic Deposits Using Clementine UVVIS Data [#1953]*

Clementine data are used to examine the compositions of pyroclastic deposits in the lunar farside crater Oppenheimer. The compositions of these deposits are compared to those of other pyroclastic deposits in SPA basin and in Alphonsus and J. Herschel craters.
Hawke B. R. Robinson M. S. Craddock R. A. Blewett D. T. Smith G. A.
ATIOCHEMICAL STUDIES OF THE MOSCOVIENSE BASIN REGION [2094]
Clementine UVVIS images, iron maps, titanium maps, and maturity images were used to investigate the composition and origin of surface units in the Moscoviense basin region.

Hiesinger H. Head J. W. III Wolf U. Neukum G.
NEW AGE DETERMINATIONS OF LUNAR MARE BASALTS IN MARE COGNITUM, MARE NUBIUM, OCEANUS PROCELLARUM, AND OTHER NEARSIDE MARE [1815]
We present crater size-frequency distribution measurements for spectrally homogeneous basalt units in Mare Cognitum, Mare Nubium, Oceanus Procellarum, and other nearside maria. We combine these data with volume estimates to study the flux of basalts.

Boroughs L. L. Spudis P. D.
THE STRATIGRAPHY OF LAVA FLOWS IN NORTHERN OCEANUS PROCELLARUM, MOON [1192]
Using Clementine image data, we have mapped the stratigraphy of lava flows in Northern Oceanus Procellarum. We find a variety of flows with varying compositions and ages, attesting to protracted volcanic eruption history.

Jolliff B. L. Gillis J. J. Lawrence D. J. Maurice S.
THORIUM CONTENT OF MARE BASALTS OF THE WESTERN PROCELLARUM REGION [2143]
Maps of FeO, TiO2, and Th for a region of Western Procellarum are shown at half-degree resolution. Using compositional profiles and geological relationships, we show some of the basalts to be enriched in Th, similar to Apollo 11 high-K basalts.

Heather D. J. Dunkin S. K. Wilson L.
VOLCANISM ON THE MARIUS HILLS PLATEAU [1542]
The Marius Hills region has been studied using Clementine data. A wide range of eruption styles have shaped the plateau. Pyroclastics appear on many scales as both localized glassy deposits and well developed cones. Modelling work is ongoing.

Malum K. M. Colson R. O. Sawarynski M.
MAPPING ACTIVITY VARIATIONS FOR Ru2O3 IN LUNAR VOLCANIC GREEN GLASS ANALOGS USING DIFFERENTIAL PULSE VOLTAMMETRY [1672]
Using differential pulse voltammetry, we are mapping variations in activities for NiO and Ru2O3 as a function of compositional variation for compositions centered around an Apollo 15 green glass analog.