Tuesday, March 12, 2002

THE LUNAR REGOLITH: THINK GLOBALLY, ACT LOCALLY
1:30 p.m.  Salon A

Chairs: B. L. Jolliff
          T. H. Prettyman

James C. L.  Letsinger S. L.  Basu A.*  Wentworth S. J.  McKay D. S.
Size Distribution of Fe\textsuperscript{0} Globules in Lunar Agglutinitic Glass [#1827]
SEM-BSE measurements of the size distribution of Fe\textsuperscript{0} globules in agglutinitic glass in seven lunar soils average about 120 ± 20nm suggesting similar modes of origin.

Moon-wide Evidence that the Fusion-of-the-Finest Fraction-F\textsuperscript{3}-Model Really Explains the Chemistry of the Agglutinitic Glass [#1291]
Detailed lunar soil characterizations from both the mare and highlands provide the first Moon-wide evidence for the F\textsuperscript{3} model, by some guy from New Mexico. This paper addresses the major ramifications of these forensic data.

Hashizume K.*  Chaussidon M.  Marty B.  Terada K.
Micro-Analyses of Carbon Isotopic Composition in Lunar Soil Samples [#1465]
Depth-profiling analyses of the carbon isotopic composition within the 100 nm thick surface layers of lunar soil grains reveal existence of a C-bearing thin film ([C] up to 16wt%) with a δ\textsuperscript{13}C value as high as +120‰. This C component seems to be of a non-solar origin.

Korotev R. L.*
The Luna 20 Regolith [#1224]
The Luna 20 regolith more mafic, more magnesian, and richer in incompatible elements than typical feldspathic surface crust because it contains material of the lower crust ejected from the Crisium basin.

Lithologic Diversity in Lunar Regolith: Lessons for Future Lunar Exploration Strategies with Application to South Pole-Aitken Basin [#1156]
Diversity of rock fragments in individual regolith samples from Apollo sites and inferred regolith stratigraphy from large craters and basins in the South Pole-Aitken region are used to assess the value of a single-point sample from the SPA basin.

Pieters C. M.*
Give and Take Between Spa and Imbrium Basins [#1776]
Assessment of lunar global rock types indicates a broad region north of Imbrium is unusually mafic. This noritic zone could be antipodal deposits from SPA, but is more likely deep seated debris from the Imbrium impact forming the northern smooth plains.

Lucey P. G.*  Lawrence D. J.  Feldman W. C.  Elphic R. C.  Prettyman T. H.  Maurice S.
A New Rock Type Found at Tycho [#1056]
LP and spectral data suggest that the crater Tycho exposed a new rock type. It is an anorthositic gabbro with 2-4 wt% FeO, a plagioclase to mafic+plag ratio of 65-70, and a mafic mineral assemblage dominated by high-Ca pyroxene with Mg* of 70-80.

Petrologic Mapping of the Moon: A New Approach [#1104]
We have used the Ti-(Fe-Ti)-“Al” ternary plot to map the distribution of petrologic units on the Moon based on Clementine images of Fe and Ti content. This new technique allows us to better understand the regional and global history of the Moon.
Efficient Interpretation of Remote Sensing Data: Aristarchus Plateau [#1328]

We applied an extremely efficient endmember detector/linear unmixing algorithm and a Hapke-based spectral analysis model to Clementine UVVIS and NIR data resulting in an efficient and effective compositional interpretation of the image spectra.

Library Least Squares Analysis of Lunar Prospector Gamma Ray Spectra [#2012]

Using library least squares, we have carried out the first complete analysis of Lunar Prospector gamma ray spectra. Maps of major elements, including O, Si, Ti, Al, Fe, Mg, and Ca, and radioactive elements, including Th, U, and K, have been developed for the whole moon.

Sources of Near Side Lunar Magnetic Anomalies [#1638]

Lunar Prospector magnetometer data has been used to identify a number of nearside magnetic anomalies. Some of the features identified appear to correlate with impact ejecta, supporting a basin ejecta origin to the nearside anomalies.

King Crater Impact Melt Compositions: Possible Impactor Contamination [#1719]

The distribution and composition of highland and impact melt units at King Crater suggest that parts of an iron-rich impactor (e.g., OC, iron) survived the impact and contributed to the distinctive downrange melts. Frictional melting and drag during impact enhances such contamination.

Determination of Permanently Shadowed Terrain in the Lunar Polar Regions [#1819]

Modelling of simulated simple crater topography data was conducted in order to investigate how the amount of permanent shadow inside a crater varies as a function of size, latitude, and season.