

2008 Joint Meeting of The Geological Society of America, Soil Science Society of America, American Society of Agronomy, Crop Science Society of America, Gulf Coast Association of Geological Societies with the Gulf Coast Section of SEPM

Paper No. 345-15

Presentation Time: 11:30 AM-11:45 AM

Industrial-Scale Production of Lunar Simulant Components

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As part of the U.S. Geological Survey (USGS) lunar highlands simulant program for NASA, an industrial plasma system has been completed. The plasma process currently provides the glass and agglutinates components for the NU-LHT series simulants. In addition to the LHT series, the process has been successfully tested producing glass with OB-1 base material.

Different plasma processes have been developed to provide the following key component categories for simulant designers / users:

- Glass
- Agglutinate
- Agglutinate with nanosized Fe
- Synthetic Anorthite material
- Melt Breccias
- Custom formulated material made from Synthetic (batch) sources

The developed process is immediately ready to provide the components listed above at production levels of 5,000 kg to 12,000 kg of material per month. For components other than Agglutinates, a proprietary remotely-coupled plasma is used to bring the base material to molten temperatures. Various cooling processes are used to produce the different component physical characteristics. Controlling the thermal history and re-crystallizing material from a molten state provides a means to create custom synthetic material from readily-available sources.

Data will also be presented to show the similarities of Micrometeorite impact to the plasma process and how exposure to the extreme temperature / thermal gradient is producing the agglutinate from terrestrial materials. In addition, recent work on production of melt breccias and integration of nano-sized Fe will be presented.

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[General Information for this Meeting](#)

Session No. 345

[Living on a Dusty Moon](#)

George R. Brown Convention Center: 310AD
8:00 AM-12:00 PM, Thursday, 9 October 2008

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