Beat: Miscellaneous

NASA: Mineralogy of Martian soil similar to Hawaii`s volcanic soils

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USPA News - The mineralogy of Martian soil is similar to weathered basaltic soils of volcanic origin in the U.S. state of Hawaii, scientists said on Wednesday after NASA`s Mars rover Curiosity completed its initial experiments. After the first sample of Martian soil was recently ingested by Curiosity, the minerals were identified with the rover`s Chemistry and Mineralogy instrument (CheMin).

The results are filling gaps and adding confidence to earlier estimates of the mineralogical makeup of the dust and fine soil widespread on the Red Planet. David Blake of NASA Ames Research Center in Moffett Field, California, who is the principal investigator for CheMin, said the quantitative results provide refined and in some cases new identifications of the minerals in this first X-ray diffraction analysis on Mars. The identification of minerals in rocks and soil is crucial for the mission`s goal to assess past environmental conditions, NASA explained, adding that each mineral records the conditions under which it formed. The chemical composition of a rock provides only ambiguous mineralogical information, as in the textbook example of the minerals diamond and graphite, which have the same chemical composition but strikingly different structures and properties. "Our team is elated with these first results from our instrument," said Blake. "They heighten our anticipation for future CheMin analyses in the months and miles ahead for Curiosity." Meanwhile, David Bish, CheMin co-investigator with Indiana University in Bloomington, said the results have allowed scientists to know Mars` mineralogy is similar to basaltic material, with significant amounts of feldspar, pyroxene and olivine, which was not unexpected. Roughly half the soil is said to be non-crystalline material, such as volcanic glass or products from weathering of the glass. Bish said: "So far, the materials Curiosity has analyzed are consistent with our initial ideas of the deposits in Gale Crater recording a transition through time from a wet to dry environment. The ancient rocks, such as the conglomerates, suggest flowing water, while the minerals in the younger soil are consistent with limited interaction with water." During the two-year prime mission of the Mars Science Laboratory Project, researchers are using Curiosity`s 10 instruments to investigate whether areas in the Gale Crater ever offered environmental conditions favorable for microbial life.

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