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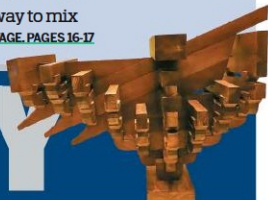
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Scientists map chemical makeup of lunar surface

CHANGCHUN — A research team led by Chinese scientists has precisely mapped the chemical composition of the lunar surface, providing key data for the study of the moon's evolution.

Lunar surface chemistry is essential for revealing petrological characteristics in order to understand the evolution of the moon.

Existing chemistry mapping based on the lunar samples collected by the Apollo missions of the United States and the Russian Luna missions could only reveal the evolution of the moon 3 billion years ago, missing the critical late period.

The lunar samples brought back by China's Chang'e 5 mission, however, have been proven to carry information about young volcanic activity about 2 billion years ago and distinctive material composition.

The research team accurately estimated the content of major elements on the lunar surface by combining the sample data from Chang'e 5, Apollo and Luna with a deep learning-based inversion model, said Yang Chen, a professor at Jilin University.

They subsequently created a new

lunar surface chemical composition distribution map with high precision and high resolution, which comprehensively reflected the chemical characteristics of the lunar surface.

The researchers also calibrated the young mare basalt units based on the newly calculated element content, which will provide reliable data for historical studies of magmatic activity and thermal evolution in the late lunar period and for future lunar sample return missions, Yang said.

The study was jointly conducted by Jilin University, the National Astronomical Observatories of the Chinese Academy of Sciences, the University of Trento in Italy, the University of Iceland and other Chinese and foreign research institutions.

Ouyang Ziyuan, a leading Chinese scientist and the first chief scientist of China's lunar probe project, was also involved in the study.

The study was recently published in the journal *Nature Communications*.

XINHUA