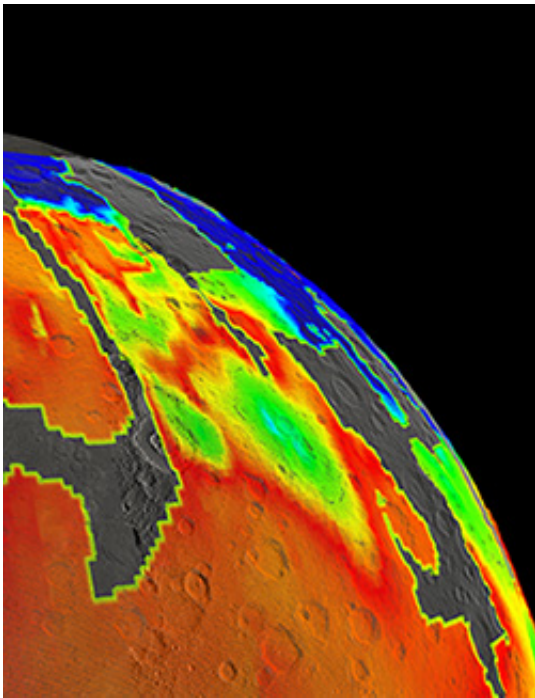


Geologists identify the mineralogy of Mercury

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Credit: University de Liege

For the first time, geologists from the University of Liège have been able to determine the nature of the minerals present on the surface of Mercury - one of the four telluric planets in our solar system. Their study, published this week in the journal *Nature Geoscience*, is based on experiments conducted in laboratory at extreme temperatures, to reconstitute the conditions observed during the crystallization of magmas. The mineralogy of rocks on the surface of the planets is an

excellent indicator of the origin and evolution of the planets since the origins of the solar system.

Between 2011 and 2015, the Messenger probe sent by NASA orbited Mercury and collected tens of thousands physico-chemical measurements of the Mercury crust. It is on the basis of these measurements that Olivier Namur and Bernard Charlier, researchers at FRS-FNRS, were able to reproduce - in their new experimental petrology laboratory at Université de Liège using a unique equipment in Belgium - samples of Mercury magma.

Their conclusions help us to better understand the mineralogy of Mercury, which remained an enigma, and more globally the evolution of this planet. The crust of Mercury is of magmatic origin, produced by lava from the mantle between 4.2 and 3.5 billion years ago. In their study, the two researchers were able to define different regions in the northern hemisphere of Mercury, each characterized by a specific mineralogy.

Their major discovery is the link between the age of these regions and the mineralogy of the lava on their surface, which demonstrates the major role of the thermal evolution of Mercury on its volcanic history. The [magmatic activity](#) on Mercury was interrupted early 3.5 billion years ago, making it the telluric planet that cooled the most rapidly in our [solar system](#).

More information: Olivier Namur et al. Silicate mineralogy at the surface of Mercury, *Nature Geoscience* (2016). [DOI: 10.1038/ngeo2860](https://doi.org/10.1038/ngeo2860)

Provided by University de Liege

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