

The secrets of planets unveiled by infrared spectroscopy

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Infrared spectroscopy is a powerful tool for investigation of planets, moons, asteroids and comets, because many minerals can be identified by their infrared spectral fingerprint. From these spectra it is possible to draw important conclusions about the evolution and status of planets and other objects in our planetary system. I will present results obtained by laboratory infrared spectroscopy of extraterrestrial material as well as results obtained by remote sensing and in-situ measurements of planets. Furthermore, I will discuss the perspectives of synchrotron radiation for analyzing extraterrestrial material at various wavelengths from infrared to x-ray.

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Prof. Dr. Dr. h.c. Heinz-Wilhelm Hübers received the Diploma and Doctoral degree in physics from the University of Bonn in 1991 and 1994, respectively. From 1991 to 1994, he was with the Max-Planck Institut für Radioastronomie in Bonn. In 1994, he joined the Deutsches Zentrum für Luft und Raumfahrt (DLR) in Berlin, where he became Head of Department in 2001. In 2009 he received a habilitation degree from the University of Stuttgart. From 2009 to 2014, he has been a Professor of Experimental Physics with the Technische Universität Berlin and the Head of the Department "Experimental Planetary Physics" at DLR. In 2014, he became the Director of the DLR-Institute of Optical Sensor Systems and a Professor of Physics with the Humboldt-Universität zu Berlin. His research interests are in the field of optical sensors for space applications, particularly for atmospheric research, planetary research and security. H.-W. Hübers is principal investigator and co-investigator of several airborne spaceborne missions. He was the recipient of the Innovation Award on Synchrotron Radiation in 2003 and the Lilienthal Award in 2007. In 2021, he was awarded an honorary doctorate from Chalmers University of Technology for his achievements in THz space research.