

Press release

For immediate release

## HKU Research Team to Develop “Short-Wavelength Infrared Spectrometer” for China’s Tianwen-3 Mission Advancing the Search for Signs of Life on Mars

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*Image 1: HKU Short-Wavelength Infrared Spectrometer”, led and developed by HKU, has been selected for deployment on the service module of the Tianwen-3 mission.*

A research team from the Department of Earth and Planetary Sciences at The University of Hong Kong (HKU) will participate in China’s planetary exploration mission, Tianwen-3. According to the selection results released by the China National Space Administration recently, the “Short-Wavelength Infrared Spectrometer”, led and developed by HKU, has been officially chosen as a payload for deployment on the service module of the Tianwen-3 mission. The instrument will play a critical role in forecasting dust storms during landing manoeuvres, searching for biosignatures, detecting hydrous minerals, and surveying Martian resources.

Tianwen-3 mission is China’s first Mars Sample Return mission. Scheduled for launch in 2028, with sample return planned for 2031, the mission aims to address fundamental scientific questions, including the uniqueness of life on Earth and the universality of biochemical mechanisms in the universe.

Professor Xiang ZHANG, President and Vice-Chancellor of HKU, commented, “HKU is honoured to participate in the Tianwen-3 planetary exploration mission. The selection of our research project as a mission payload reflects the University’s deep-seated expertise in planetary science and deep-space exploration, while marking a significant contribution to the nation’s strategic advancement as a leading space power. We remain committed to deepening our frontier research to further expand the boundaries of human knowledge.”

The project is led by Professor Yiliang LI of the Department of Earth and Planetary Sciences at HKU, with major collaborating institutions including Zhejiang University and the Chinese Academy of Sciences’ Changchun Institute of Optics, Fine Mechanics, and Physics.

The orbital spectrometer will undertake three primary tasks:

1. To monitor the potential emergence and development of dust storms, thereby guiding the safe landing of the lander at sites of highest scientific value.
2. To provide detailed, high-spatial-resolution mineralogical mapping of candidate landing sites from orbit, supporting final-stage landing site selection for the Tianwen-3 mission.
3. Following completion of the sample return phase, the instrument will remain in orbit for at least five years to conduct sustained observations of Mars's low-latitude regions.

Professor Li stated: “This mission marks a significant contribution from Hong Kong’s scientific community to the nation’s deep space exploration programme. Using hyperspectral imaging technology, we will directly search for biosignatures and hydrous minerals on Mars, which is fundamentally important for understanding the distribution of life in the universe.”

Professor Li has served as a core member of both the Landing Site Selection Team and the Mission Science Team of Tianwen-3 mission. The selection of this payload demonstrates HKU’s international competitiveness in Earth and planetary sciences while fostering interdisciplinary synergy across science and engineering in Hong Kong.

Professor Li further noted that the project aligns with two concurrent developments: “First, the continued expansion of HKU’s research capabilities in Earth and planetary sciences, particularly in cosmochemistry and astrobiology focusing on solar system bodies such as asteroids, Mars and Jupiter; and second, the Hong Kong SAR Government’s strategic initiative to cultivate a local aerospace industry, by leveraging the region’s geographical advantages.”



Image 2: The instrument will be used for key investigations, including forecasting dust storms during the landing maneuver, searching for biosignatures, detecting hydrous minerals, and surveying resources on Mars.



Image 3: Professor Yiliang LI of HKU Earth and Planetary Sciences.

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