



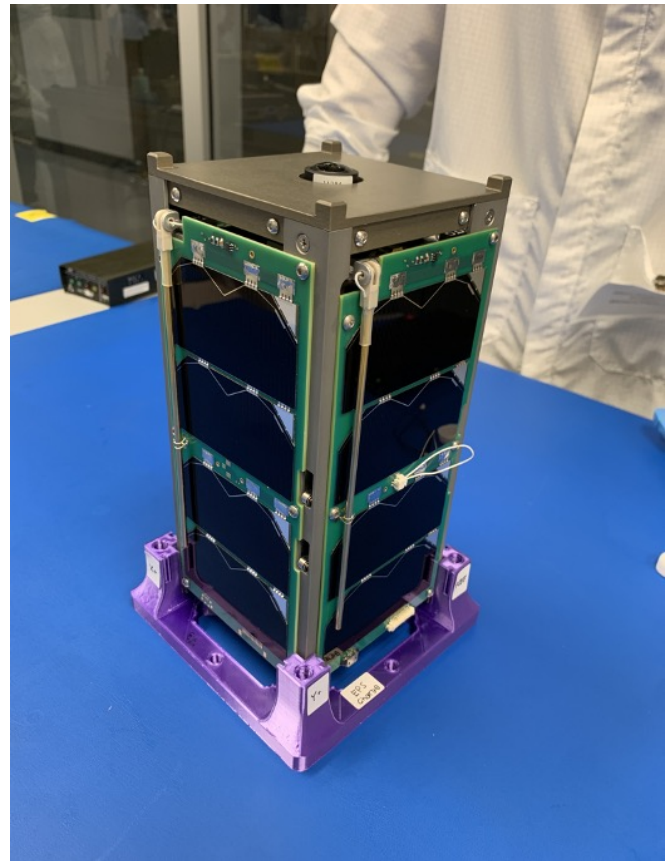
Ukpik-1: Western University's first CubeSat Project has been Launched aboard SpaceX CRS-28

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A CubeSat (portmanteau of “cube” and “satellite”) is a small, lightweight, and versatile satellite composed of a multiple of units each with a size of 10 x 10 x 10cm (1U). Within this small volume, a satellite must fit components that would allow it to operate successfully in the harsh environment of space. At the bare minimum, these components will include a transceiver for communications, batteries and solar panels for power, an onboard computer to act as the brains of the satellite, a structure to hold everything together, and a scientific payload.

The Ukpik-1 CubeSat is the product of a collaboration between Western University and Nunavut Arctic College, funded by Canadian Space Agency in 2018 as part of the Canadian CubeSat Project (CCP). The goal of the project is to provide students with training and exposure in spacecraft design and



Ukpik-1 prior to integration with the Nanoracks
CubeSat Deployer.

(Source: Western CubeSat Project)

development, as well as mission operations and outreach program development. In line with this goal, around 80 students composed of graduate and undergraduate students were involved in the overall design, assembly, and testing of the satellite over a period of 5 years (2018-2023).

The Ukpik-1 CubeSat is a 2U CubeSat (10 x 10 x 20 cm) carrying two 180-degree cameras (provided by industry partner Canadensys Aerospace) at opposite ends as the payload. These two VR cameras can take an image at the same time, and the resulting images may then be stitched together to form a complete 360-degree image. The stitched image may then be viewed through Virtual Reality goggles, enabling the wearer to see and feel what it is like to be in space with a view of the Earth's surface below.

Special care and consideration have to be taken during assembly because once the CubeSat is in space, it can no longer be accessed. CubeSats contain very sensitive electrical components and any presence of foreign object debris could mean cracks in the solar cells, accidental short circuits in the electronics, and unwanted materials going into space. For this reason, the Western Nanofabrication Facility clean room was vital for the assembly of the satellite. The facility provided a temperature controlled, humidity regulated, and clean environment for this assembly.



Western CubeSat Project team assembling the Ukpik-1 satellite in the Western Nanofabrication Facility.
PI: Dr. Jayshri Sabarinathan (middle). Students (left to right): Wen Bo, Alexis Pascual, Stephen Amey.
(Source: Western CubeSat Project)

Ukpik-1 has been successfully launched to the International Space Station aboard the SpaceX CRS-28 mission on June 5th, 2023 thanks to the launch services provider, Nanoracks. The CubeSat is scheduled to be deployed on July 6th, 2023, with operations soon to follow afterwards. Stay tuned for cool images of space!

We would like to provide special acknowledgments to the Canadian Space Agency, Nunavut Arctic College, Western Institute for Earth & Space Exploration, Western Nanofabrication Facility, Western Engineering University Machine Services, Western Engineering Electronics Shop, CMC Microsystems, Canadensys Aerospace, Nanoracks, London Amateur Radio Club, and all other individuals for their roles and contributions in making this project an outstanding success!



Integration of Ukpik-1 in the Nanoracks CubeSat Deployer, at the Canadian Space Agency.
(left to right) Alexis Pascual, Mackenzie Essington, Wen Bo, Jin Sia, Nicole Martensson,
Delaney Stevens, (PI) Dr. Jayshri Sabarinathan, Stephen Amey.
(Source: Western CubeSat Project)

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