

Development status of the lightning and airglow camera onboard Venus Climate Orbiter

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We are developing a lightning and airglow camera (LAC) onboard the Venus Climate Orbiter (VCO). LAC is a high-speed imaging sensor and measures lightning flashes and airglow emissions on the nightside disk of Venus when VCO is located within the umbra of Venus.

We will adopt object-side telecentric optical system, and use a multi-anode avalanche photo-diode (APD) as a detector. It has 8 by 8 matrix of 2-mm square pixels. We will measure lightning flashes at 777.4 nm [OI] with 4 by 8 pixels and airglow emissions at 552.5 nm [O2], 557.7 nm [OI] and 630.0 nm [OI] with 1 by 8 pixels, respectively. These filters are rectangular and we set them on the light receiving side of the detector. Individual lightning flash events are recorded with a 50-kHz pre-trigger sampling, while airglow images are recorded continuously at intervals of 10 - 90 seconds. The total weight of LAC is about 1.5 kg. Now we are verifying optical and electrical performances of multi-anode APD which is newly developed, and testing optical multi-anode APD the pre-trigger sampling logic using an electrical breadboard model. We report the results of these tests.