

Advanced remote-sensing sensors using a liquid crystal tunable filter and their applications

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New types of remote-sensing sensors for 50-kg class macro-satellites have been developed at Hokkaido University, a member of UNIFORM and Hodoyoshi projects promoted by the Japanese government. In those sensors, a liquid crystal tunable filter (LCTF) is applied to a space borne sensor for the first time. The LCTF is a kind of optical band pass filter that electrically controls the center wavelength in the visible (420-700 nm) and near infrared (650-1050 nm). Compared to conventional multispectral sensors using a rotating filter wheel with (normally less than 20) selected spectral bands, the advanced sensor using the LCTF has the great advantage of enabling multispectral observations with hundreds of bands. The LCTF can also reduce size, weight, and power consumption of multispectral sensors. In this presentation, applications of the advanced sensor using the LCTF to Earth observations by microsatellites are introduced.