

Topics (T)  
Interactive Presentations (IP)

Author: Ms. Surinder Kaur Chawla  
Dr B R Ambedkar National Institute of Technology Jalandhar, India, inderchawla649@gmail.com

SATELLITE DESIGN TO OBSERVE AND QUANTIFY OCEAN COLOR USING PUSH-BROOM  
SPECTROMETER BASED ON PLANAR LIGHTWAVE CIRCUIT MZI ARRAY**Abstract**

After reviewing the technology of MERIS in ENVISAT and OLCI in Sentinel-3 and analyzing their instrumentation, a new satellite design has been proposed in this paper, keeping in mind the developing technology. The previous satellites were based on push-broom methodology, which has a significant disadvantage of varying sensitivity and lower resolution. The proposed satellite design is also based on push-broom, although the spectrometer is based on a planar lightwave circuit Mach-Zehnder Interferometer (MZI) array. When viewed from the satellite in its orbit, the source moves across the aperture and enters various MZIs, while nearby sources simultaneously enter nearby MZIs. The spectrometer is insensitive to the polarizing properties of the materials and is capable of maintaining single-mode propagation in a broad spectrum. The satellite design is further used to study the ocean color, which is one of the essential climate variables of the ocean. The study further discusses the application of studying ocean color to understand phytoplankton concentration in a particular area, as they are the source of ocean nutrients. Also, a drift in the phytoplankton is the first indication of climate change in the environment and may cause special plankton blooms such as red tides.