

Next-Generation Hyperspectral camera for advanced Remote Sensing

Breif Background

Hyperspectral Imaging (HSI) is used increasingly in many research and industrial applications, such as Industrial Quality Control, remote sensing, analysis of earth minerals, land cover, water quality, plastics and waste recycling, pharmaceutical products research and quality control, agriculture and vegetation research, food quality control and analysis, medical science and many more, but such hyperspectral cameras are still imported from other countries. An indigenous product towards "Make in India" will be a boon to the country's technology developments as we progress in the direction of self-sustainable India (Atmanirbhar Bharat Abhiyaan).

Tech/Prod. Summary

Next-Generation Hyperspectral camera is an indegenous camera which can capture the detailed informtaion of a scene at all possible wavelengths. A novel compressed sensing approach is combined with a multilayer thin-film coating for precise sensing.

Tech/ Product Description

The Developed Camera has a HSI sensor which employs compressed sensing for effective object acquiring and a special multilayer thin film coating deposited using pulsed laser deposition capable of absorbing entire wave length including the NIR from the object to excite a signal in the CMOS sensor. The multilayers with different Nanosemiconductor materials with different thickness and layers are capable of absorbing the entire spectrum.

Market Potential

1. India Hyperspectral Imaging Systems
Market: USD 473.6 million in 2023 → USD 1,043.8 million by 2030.
2. Medical Hyperspectral Imaging
Market: USD 98.7 million in 2023 → USD 231.3 million by 2030

Value Proposition

1. Compact and Cost-Effective Design
2. multilayer thin-film coating assisted Full spectrum sensing ability
3. Indigenous and Customizable Technology

Application Sectors

- Agricultural sector for land mapping and crop mapping
- Mineral identification, fruit and vegetable screening for pesticide residue identification

TRL



7

Impact - SDG: SDG 9 - Industry, Innovation, and Infrastructure:

