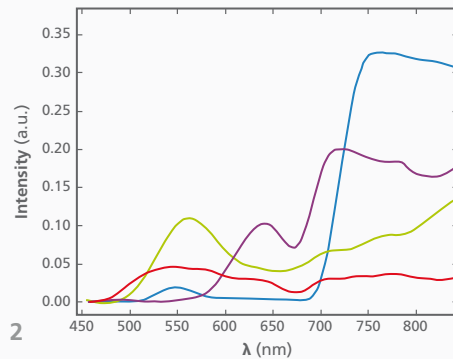


1



2



3

- 1 Camera image after overlay of all channels.
- 2 Spectra of selected objects in the scene:
 - green leaf of plant (natural)
 - green leaf of plant (artificial)
 - green plastic plant pot
 - red apple
- 3 Demonstration system for multispectral imaging.

COMPACT MICROOPTICAL SYSTEM FOR MULTISPECTRAL IMAGING

Ambition

Lightweight system for multispectral imaging of extended scenes with high spatial and spectral resolution in single shot acquisition.

Application

- Precision agriculture, plant monitoring
- Security and surveillance
- Biomedical inspection
- Recycling, industrial sorting

Characteristics

- | | |
|-----------------------|--------------------------|
| - Overall size | 60x60x28 mm ³ |
| - Total track length | 7.2 mm |
| - Spectral range | 450-850 nm |
| - Spectral resolution | 10-14 nm |
| - Spectral sampling | ~ 6 nm (linear) |
| - Number of channels | 66 |
| - Image resolution | 400x400 pixel |
| - F-number (F/#) | 7 |
| - Field of view | 68° (diagonal) |
| - Spatial resolution | 4.2 LP/° |
| - Pixel pitch | 7.4 μm |

Technical concept / Technology

- Multi-aperture imaging principle
- System concept based on linear varying spectral filter, microlens-array, baffle array and full frame format image sensor (CCD)
- Linear sampling of the spectral range in the entire field of view
- Adapted image processing for the analysis of spectra from a raw image
- Origination of lens array on wafer scale by reflow of photo-resist and subsequent UV-molding process

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