

1. Record Nr.	UNINA9910512159003321
Autore	He Xin
Titolo	Multispectral Image Sensors Using Metasurfaces / / by Xin He, Paul Beckett, Ranjith R Unnithan
Pubbl/distr/stampa	Singapore : , : Springer Nature Singapore : , : Imprint : Springer, , 2021
ISBN	981-16-7515-5
Edizione	[1st ed. 2021.]
Descrizione fisica	1 online resource (122 pages)
Collana	Progress in Optical Science and Photonics, , 2363-510X ; ; 17
Disciplina	771
Soggetti	Optics Metamaterials Nanotechnology Materials - Analysis Imaging systems Optics and Photonics Nanoengineering Imaging Techniques Nanoscale Design, Synthesis and Processing
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Introduction to Metasurfaces for Optical Applications -- Metasurfaces and Multispectral Imaging -- Transmission Enhancement in Coaxial Hole Array Based Plasmonic Color Filters -- CMY Camera using Nanorod Filter Mosaic Integrated on a CMOS Image Sensor -- A Single Sensor Based Multispectral Imaging Camera -- Hybrid Color Filters for Multispectral Imaging -- Conclusions and Future Outlook.
Sommario/riassunto	This book presents how metasurfaces are exploited to develop new low-cost single sensor based multispectral cameras. Multispectral cameras extend the concept of conventional colour cameras to capture images with multiple color bands and with narrow spectral passbands. Images from a multispectral camera can extract significant amount of additional information that the human eye or a normal camera fails to capture and thus have important applications in precision agriculture, forestry, medicine, object identifications, and classifications.

Conventional multispectral cameras are made up of multiple image sensors each externally fitted with a narrow passband wavelength filters, optics and multiple electronics. The need for multiple sensors for each band results in a number of problems such as being bulky, power hungry and suffering from image co-registration problems which in turn limits their wide usage. The above problems can be eliminated if a multispectral camera is developed using one single image sensor.
