VDB Solar Solutions

Photovoltaic detector immersion lens

Overview

Harnessing the plentiful solar energy reaching the earth via photovoltaics will play a major role in.

Ray tracing simulations were performed with the software FRED. We performed simulations to compare optical concentration efficiencies of cone geometries with.

While designing optical concentrators, the constant brightness theorem18,19,20 imposes strict limits. The theorem says that the optical power-flow per unit of area and solid angle cann.

The aim of the height optimization is to design a short device to save material and weight, while maintaining efficiency. AGILE device is scalable in the ray-domain (i.e., as long as the conc.

For photovoltaic (PV) systems where the light enters the input aperture in air (RI ≈ 1) and is absorbed in a high-index PV material (e.g. silicon with a RI ≈ 3.5), theoretical passive concentr.

Photovoltaic detector immersion lens

[Mid-IR Photovoltaic Detectors, HgCdTe (MCT)]

A standard hemispherical immersion lens forms an image in the plane of the sensor element. Features. Photovoltaic Detectors Optimized for Mid-IR Wavelength Ranges. ...

193 nm immersion photodetector with an ultra-high EQE of 83.7%

This work has provided an idea for developing zero-power-consumption and integrated VUV photovoltaic detectors with ultra-fast and high-sensitivity VUV detection ...

All-silicon photovoltaic detectors with deep ultraviolet selectivity

For a practical photodetector, fast switching speed and high on-off ratio are essential, and more importantly, the integration capability of the device finally determines its application level. In this work, the judiciously engineered Si3N4/Si detector with an open-circuit voltage of 0.41 V is fabricated by chemical vapor deposition methods, and exhibits good ...

HgCdTe photovoltaic IR detectors PVI-2TE-5-1x1-TO8/TO66 ...

2.2 - 4.2 µm, four-stage thermoelectrically cooled, optically immersed PVI-4TE-4 is four-stage thermoelectrically cooled IR photovoltaic

detector based on sophisticated HgCdTe heterostructure for the best performance and stability, optically immersed in order to improve parameters of the device. The detector is optimized for the maximum performance at ?opt = 4.0 um. Cut-on ...

[Uncooled IR Detectors Maintain Sensitivity]

Without optical immersion, photovoltaic detectors have subbackground-limited-photodetector performance that is close to the G-R limit. When thermoelectrically cooled with two-stage Peltier coolers, well-designed optically immersed devices can detect up to 10 11 cmHz 1/2 /W at 5 um, approaching the performance limit of background-limited photodetectors. 8

New Trends and Approaches in the Development of Photonic IR ...

This chapter focuses on new trends in the development of photon detectors and photodetectors arrays based on them. In particular, new strategies in the development of IR ...

HgCdTe photovoltaic IR detectors PVI-2TE-4-1x1-TO8/TO66 ...

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Development of HgCdTe Photovoltaic Detectors with Integrated Immersion

HgCdTe epitaxial materials are grown on CdZnTe substrates by an Isothermal Vapor Phase Epitaxy(ISOVPE) method.On this base,a HgCdTe photovoltaic detector with an integrated optically immersed lens structure operating in the waveband from 2.5um to 3.2um at near room temperature is developed cause the HgCdTe epitaxial material grown by ISOVPE has a ...

Development of optically immersed, near-room-temperature ...

Optically immersed HgCdTe photovoltaic detectors in the 2.5 to 3.2 um wavelength region operating at near room temperatures have been developed based on HgCdTe graded structure materials grown by opened tube isothermal vapor phase epitaxy (ISOVPE

HgCdTe mid-Infrared photo response enhanced by monolithically ...

Concerning a HgCdTe detector with a pitch size of 40 um × 40 um, when the photosensitive area is reduced to 5 um × 5 um, the meta-lens could still keep the light absorptance above 50%, which

Demonstration of T2SLs InAs/InAsSb Based ...

presents the detectivity performance comparison of the GaAs hyperhemispherically immersed three-stage T2SLs InAs/InAsSb-based detector developed in this work with the T2SLs InAs/GaSb-based ICIPs

HgCdTe photovoltaic IR detectors PVI-2TE-5-1x1 ...

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PVI-4TE 2-12 um IR PHOTOVOLTAIC DETECTORS ...

VIGO SYSTEM S.A. 129/133 Poznanska St. 05-850 Ozarów Mazowiecki, Poland phone: +48 22 733 54 10 fax: +48 22 733 54 26 info@vigo.pl MCT Photovoltaic detectors The packages of cooled detectors (TO8, TO66) are filled with dry

Knowledge Base

The optical detector area can be significantly magnified in detectors supplied with optical concentrators, for eg. immersion lenses (see Optical immersion chapter). Operating temperature T The detector active element temperature.

HgCdTe mid-Infrared photo response enhanced by monolithically ...

Polarization-independent dielectric meta-lens is proposed to monolithically integrate with a HgCdTe infrared photodetector to concentrate power flux into a reduced ...

HgCdTe photovoltaic IR detectors PVI-3TE-4-1x1-TO8/TO66 ...

2.2 - 4.2 µm, four-stage thermoelectrically cooled, optically immersed PVI-4TE-4 is four-stage thermoelectrically cooled IR photovoltaic detector based on sophisticated HgCdTe heterostructure for the best performance and stability, optically immersed in order to improve parameters of the device. The detector is optimized for the maximum performance at ?opt = 4.0 um. Cut-on ...

HgCdTe photovoltaic IR detectors PVI-4TE-8-1x1-TO8/TO66 ...

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Photoconductive and Photovoltaic IR Detectors , SpringerLink

A detector with an immersion lens is best suited for operation with low power of optical signal, which means the applications where the highest detectivity of the detector is ...

[Immersion lenses technology]

In the VIGO Photonics detectors comprising a GaAs substrate and an integrated immersion lens made of the same material, the refractive index of the lens is equal to 3.3. That means the detectivity is improved 3.3 times in a detector ...

Demonstration of T2SLs InAs/InAsSb Based Interband Cascade ...

This paper presents the performance of an interband cascade long-wavelength infrared detector designed for high operating temperatures supported by immersion lenses. ...

[PVI-4TE-10.6-0.5x0.5-TO8/TO66-wZnSeAR-36]

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Photoconductive and Photovoltaic IR Detectors , SpringerLink

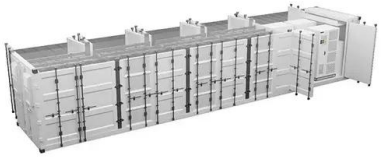
The first HgZnTe photoconductive detectors were fabricated by Z. Nowak and M.E. Ejsmont in the early 1970s (see Ref. in Rogalski []).Then, it was shown that Hg 0.885 Zn 0.15 Te can be used as a material for high-quality ambient-temperature 10.6 um photoconductors with detectivity around 10 8 cm Hz 1/2 W -1 [].].

Optical immersion of IR photodetectors as an effective way to ...

Peltier coolers as well as fast p+n photovoltaic and Dember effect detectors [11]. The use of the one-lens immersion technology is limited to fabrication of the single element and small size arrays. The main limitation comes from optical distortion. This limitation

Immersion Lenses Technology

In the VIGO Photonics detectors comprising a GaAs substrate and an integrated immersion lens made of the same material, the refractive index of the lens is equal to 3.3. That means the detectivity is improved 3.3 times in a detector with a hemispherical lens



HgCdTe photovoltaic IR detector PVI-2TE-6-1x1-TO8-wZnSeAR ...

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Sharing of secondary electrons by in-lens and out-lens detector in ...

Immersion mode uses an in-lens detector to increase the resolution of samples at low accelerating voltage (10 kV). [44] DLS data and electrophoretic mobility data were obtained using a Malvern

Innovative HgCdTe (MCT) Photovoltaic Detector

Explore high-performance MCT detectors and photovoltaic sensors at VIGO Photonics. Our advanced technology ensures superior precision and sensitivity. Elevate your applications with our cutting-edge detectors and sensors. +1(727) 388-1515 info@ About us

Two-stage thermoelectric cooler

ZWP-TO66-Z000 7 Photovoltaic detector TO66 Weight 12u1 A A Two-stage thermoelectric cooler - 2TE Immersion lens shape Hyperhemisphere Without lens Detector optical area [mm²] 0.5x0.5 1x1 2x2 0.01x0.01 - 4x4 R [mm] 0.5 0.8 1.25 infinity A [mm] 5.15±0.

A versatile photodetector assisted by photovoltaic and bolometric

The heterostructure can realize three different functional modes: (i) the p-n junction exhibits ultrasensitive detection (450 nm-2 um) with a dark current down to 0.2 pA and ...

HgCdTe photovoltaic multi-junction IR detectors PVMI-4TE-10.6 ...

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