

## Fundamentals of Infrared and Visible Detector Operation and Testing (Wiley Series in Pure and Applied Optics)

John David Vincent, Steve Hodges, John Vampola, Mark Stegall, Greg Pierce

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# Fundamentals of Infrared and Visible Detector Operation and Testing (Wiley Series in Pure and Applied Optics)

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**Fundamentals of Infrared and Visible Detector Operation and Testing (Wiley Series in Pure and Applied Optics)** John David Vincent, Steve Hodges, John Vampola, Mark Stegall, Greg Pierce

Presents a comprehensive introduction to the selection, operation, and testing of infrared devices, including a description of modern detector assemblies and their operation

This book discusses how to use and test infrared and visible detectors. The book provides a convenient reference for those entering the field of IR detector design, test or use, those who work in the peripheral areas, and those who teach and train others in the field.

Chapter 1 contains introductory material. Radiometry is covered in Chapter 2. The author examines Thermal detectors in Chapter 3; the "Classical" photon detectors - simple photoconductors and photovoltaics in Chapter 4; and "Modern Photon Detectors" in Chapter 5. Chapters 6 through 8 consider respectively individual elements and small arrays of elements the "readouts" (ROICs) used with large imaging arrays; and Electronics for FPA Operation and Testing. The Test Set and The Testing Process are analyzed in Chapters 9 and 10, with emphasis on uncertainty and trouble shooting. Chapters 11 through 15 discuss related skills, such as Uncertainty, Cryogenics, Vacuum, Optics, and the use of Fourier Transforms in the detector business. Some highlights of this new edition are that it Discusses radiometric nomenclature and calculations, detector mechanisms, the associated electronics, how these devices are tested, and real-life effects and problems Examines new tools in Infrared detector operations, specifically: selection and use of ROICs, electronics for FPA operation, operation of single element and very small FPAs, microbolometers, and multi-color FPAs Contains five chapters with frequently sought-after information on related subjects, such as uncertainty, optics, cryogenics, vacuum, and the use of Fourier mathematics for detector analyses

"Fundamentals of Infrared and Visible Detector Operation and Testing, Second Edition," provides the background and vocabulary necessary to help readers understand the selection, operation, and testing of modern infrared devices.

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