



photonics



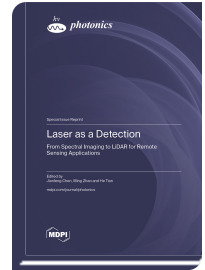
Special Issue Reprint

Laser as a Detection

www.mdpi.com/books/reprint/11557

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ISBN 978-3-7258-5283-3 (Hardback)
ISBN 978-3-7258-5284-0 (PDF)



This Reprint surveys cutting-edge laser-based sensing for remote-sensing applications, with an emphasis on spectral imaging and Lidar. It assembles peer-reviewed advances in instrumentation, methods, and deployment strategies that span the ultraviolet to the mid-infrared. Topics span hyperspectral and multispectral imaging; resonance fluorescence and laser spectroscopy; differential absorption and Raman Lidar; Doppler and frequency-modulated schemes; fiber-optic and integrated-photonics sensors; optical waveguides and resonant cavities; laser metrology and interferometry; and algorithmic, data-driven processing.

The contributions demonstrate how laser sensing enables precise measurement and mapping of the atmosphere, land, ocean, and urban environments; supports autonomous perception; and advances environmental monitoring, resource management, and industrial inspection. Emphasis is placed on miniaturization and stability; calibration and standardization; multimodal data fusion; real-time processing; and interoperability for large-scale networks.

This Reprint serves researchers and engineers in photonics, remote sensing, environmental science, and robotics. It provides a balanced view of fundamentals; system design and modeling; laboratory and field validation; and emerging applications, offering a timely reference for intelligent, networked laser-detection platforms.



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