1. Record Nr. UNINA9911035051103321

Autore	Ramachandran Balaji
Titolo	Advanced Optical Sensors : Noble Metal-Based Hybrid Composites / / edited by Balaji Ramachandran, Ragini Singh, Santosh Kumar
Pubbl/distr/stampa	Singapore : , : Springer Nature Singapore : , : Imprint : Springer, , 2025
ISBN	9789819516872 9789819516865
Edizione	[1st ed. 2025.]
Descrizione fisica	1 online resource (407 pages)
Collana	Progress in Optical Science and Photonics, , 2363-510X ; ; 38
Altri autori (Persone)	SinghRagini KumarSantosh
Disciplina	535
Soggetti	Optics Materials Detectors Composite materials Optical spectroscopy Optics and Photonics Sensors and biosensors Composites Optical Spectroscopy
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	1. Synthesis, Properties, and Significance of Noble Metals Used for Optoelectronics and Sensors -- 2. Probing Noble Metal-Based Hybrid Nanostructures for SERS Opti-Sensing -- 3. Noble-Metal-Based Composites for High-Performance SPR Sensors -- 4. Recent Advance in Plasmonic FET Biosensors Using Noble Metal-Based Composites -- 5. Noble Metal-Based Hybrid Nanogenerators for Sustainable Energy and Optoelectronic Innovation.
Sommario/riassunto	This book highlights the development and applications of hybrid materials that combine noble metals like gold, silver, platinum, and palladium with other components such as polymers, carbon-based materials, metal oxides, 2D materials, MOF’s, or mixed metal oxides. These composites have emerged as cutting-edge materials in various

fields due to their unique electrical, optical, and catalytic properties. This book further explores their intensive use in various sensor technology, including FET, upconversion, fluorescent, SPR and SERS sensors, due to their high sensitivity and selectivity. Additionally, it addresses their crucial role in self-powered TENG/PENG-based optical sensors and solar cells, where their efficiency in electron transfer and catalytic activity is boosted. With an emphasis on material synthesis, characterization techniques, and performance analysis, this book provides insights for researchers, engineers, and professionals looking to harness the potential of noble metal-based composites for advanced technological solutions.