1. Record Nr. UNINA9910140286103321

Titolo	Frontiers of surface-enhanced raman scattering : single-nanoparticles and single cells / / edited by Yukihiro Ozaki, Katrin Kneipp, Ricardo R Aroca
Pubbl/distr/stampa	Chichester, England : , : Wiley, , 2014 ©2014
ISBN	1-118-70360-X 1-118-70359-6 1-118-70357-X
Descrizione fisica	1 online resource (367 p.)
Disciplina	543/.57
Soggetti	Raman effect, Surface enhanced Surfaces (Physics) Raman spectroscopy Spectrum analysis
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Cover; Title Page; Copyright; Contents; List of Contributors; Preface; Chapter 1 Calculation of Surface-Enhanced Raman Spectra Including Orientational and Stokes Effects Using TDDFT/Mie Theory QM/ED Method; 1.1 Introduction: Combined Quantum Mechanics/ Electrodynamics Methods; 1.2 Computational Details; 1.3 Summary of Model Systems; 1.4 Azimuthal Averaging; 1.5 SERS of Pyridine: Models G, A, B, S, and V; 1.6 Orientation Effects in SERS of Phthalocyanines; 1.7 Two Particle QM/ED Calculations; 1.8 Summary; Acknowledgment; References Chapter 2 Non-resonant SERS Using the Hottest Hot Spots of Plasmonic Nanoaggregates2.1 Introduction; 2.2 Aggregates of Silver and Gold Nanoparticles and Their Hot Spots; 2.2.1 Evaluation of Plasmonic Nanoaggregates by Vibrational Pumping due to a Non-resonant SERS Process; 2.2.2 Probing Plasmonic Nanoaggregates by Electron Energy Loss Spectroscopy; 2.2.3 Probing Local Fields in Hot Spots by SERS and

SEHRS; 2.3 SERS Using Hot Silver Nanoaggregates and Non-resonant NIR Excitation; 2.3.1 SERS Signal vs. Concentration of the Target Molecule
2.3.2 Spectroscopic Potential of Non-resonant SERS Using the Hottest Hot Spots2.4 Summary and Conclusions; References; Chapter 3 Effect of Nanoparticle Symmetry on Plasmonic Fields: Implications for Single-Molecule Raman Scattering; 3.1 Introduction; 3.2 Methodology; 3.3 Plasmon Mode Structure of Nanoparticle Clusters; 3.3.1 Dimers; 3.3.2 Trimers; 3.4 Effect of Plasmon Modes on SMSERS; 3.4.1 Effect of the Spectral Lineshape; 3.4.2 Effect of Multiple Normal Modes; 3.5 Conclusions; Acknowledgment; References
Chapter 4 Experimental Demonstration of Electromagnetic Mechanism of SERS and Quantitative Analysis of SERS Fluctuation Based on the Mechanism4.1 Experimental Demonstration of the EM Mechanism of SERS; 4.1.1 Introduction; 4.1.2 Observations of the EM Mechanism in SERS Spectral Variations; 4.1.3 Observations of the EM Mechanism in the Refractive Index Dependence of SERS Spectra; 4.1.4 Quantitative Evaluation of the EM Mechanism of SERS; 4.1.5 Summary; 4.2 Quantitative Analysis of SERS Fluctuation Based on the EM Mechanism; 4.2.1 Introduction
4.2.2 Intensity and Spectral Fluctuation in SERS and SEF4.2.3 Framework for Analysis of Fluctuation in SERS and SEF; 4.2.4 Analysis of Intensity Fluctuation in SERS and SEF; 4.2.5 Analysis of Spectral Fluctuation in SERS and SEF; 4.2.6 Summary; 4.3 Conclusion; Acknowledgments; References; Chapter 5 Single-Molecule Surface-Enhanced Raman Scattering as a Probe for Adsorption Dynamics on Metal Surfaces; 5.1 Introduction; 5.2 Simultaneous Measurements of Conductance and SERS of a Single-Molecule Junction; 5.3 SERS Observation Using Heterometallic Nanodimers at the Single-Molecule Level
5.4 Conclusion

Sommario/riassunto

A comprehensive presentation of Surface-Enhanced Raman Scattering (SERS) theory, substrate fabrication, applications of SERS to biosystems, chemical analysis, sensing and fundamental innovation through experimentation. Written by internationally recognized editors and contributors. Relevant to all those within the scientific community dealing with Raman Spectroscopy, i.e. physicists, chemists, biologists, material scientists, physicians and biomedical scientists. SERS applications are widely expanding and the technology is now used in the field of nanotechnologies, a