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Nota di contenuto	 CONTENTS; 1. Wave Packet Analysis of Femtosecond Stimulated Raman Spectroscopy K. Niu, B. Zhao, Z. Sun and Soo-Y. Lee; 1. Introduction; 2. Theory; 2.1 Coupled wave theory of FSRS and its limitations; 2.2 Quantum theory of FSRS; 3. Applications, Results and Discussion; 3.1 Analytic results for FSRS from a stationary state with polyatomic harmonic potentials; 3.2 Application to FSRS of Rhodamine 6G; 3.3 Application to the FSRS from a coherent vibrational state of CDCI 3; 3.3.1 Direct fifth-order process; 3.3.2 Cascade processes; 3.3.3 Direct fifth-order and cascade results of CDCI 3 4. Conclusion and outlookAcknowledgements; References; 2. Field-Free Molecular Alignment by Two Femosecond Laser Pulses Chengyin Wu, Hongbing Jiang and Qihuang Gong; 1. Introduction; 2. Theory; 2.1

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	Creation of rotational wavepacket; 2.2 Characterization of rotational wavepacket; 2.3 Control of rotational wavepacket; 3. Experimental Method; 4. Results and Discussion; 4.1 Manipulation of alignment structures; 4.2 Enhancement of molecular alignment; 4.3 Control of molecular population; 5. Applications of Field-Free Aligned Molecules - Frequency Tuning of Few Cycle Femtosecond Laser Pulses 5.1 Parameters5.2 Simulation; 6. Conclusions; Acknowledgements; References; 3. High-Order Harmonic Generation from C60 Fullerene Plasma T. Ozaki; 1. Introduction; 2. Experimental Set-up; 3. Results and Discussion; 3.1 Observation of high-order harmonics from C fullerenes; 3.2 Influence of various experimental parameters on the HHG efficiency in fullerene plasma; 3.3 Simulations of harmonic spectra from C fullerenes; 3.4 Discussions; 4. Conclusions; References 4. Attosecond Pulse Generation, Characterization and Application Shouyuan Chen, Steve Gilbertson, He Wang, Michael Chini, Kun Zhao, Sabih Khan, Yi Wu, and Zenghu Chang1. Introduction; 2. Ultrafast Laser Development and CE Phase Stabilization for Multi-pass and regenerative amplifiers; 3. Attosecond Gating Technology; 3.1 Two-color gating; 3.2 Polarization gating; 3.5 DOG and GDOG optics 4. Attosecond Pulse Measurement and Characterization.1 Attosecond streak camera; 4.2 Frequency-resolved optical gating for complete reconstruction of attosecond bursts; 4.3 Phase retrieval by omega oscillation filtering; 5. Application of Attosecond Pulse; 5.1 Study of Helium autoionization by attosecond streaking; 5.2 Time resolved spectroscopy study of Argon; 6. Summary and Outlook; References; 5. Near-Field Imaging of Optical-Field Structures and Plasmon Wave Functions in Metal Nanostructures Hiromi Okamoto and Kohei Imura; 1. Introduction 2. What can be Observed by Near-Field Optical Imaging?
Sommario/riassunto	This book presents the latest developments and issues in both experimental and theoretical studies of multi-photon processes and the spectroscopy of atoms, molecules and nanomaterials in Physics, Chemistry, Biology and Material Science. It is an important addition to an advanced series that contains review papers suitable for both active researchers in these areas and non-experts who wish to enter the field. Special attention is paid to the recent progress of nonlinear photon- matter interactions applied to femtosecond laser induced nonadiabatic molecular alignment, high-order harmonic generati