

Hi aÁQc^i} æā } æÁÔ[} ~^i^} &^Á } ÁŒaçaè &^•
ā Šæ^iÁU&ā } &^ÁFJi ï

Œæ çÁŒã, p^, ÁR^i•^ ÊWUCE F-1 p[ç^ à^i FJi ï

EDITORS

Œ á!^, ÁJÉ/væ
Ræ ^•ŠÉŒ[|^
Y āāæ ÁŒÁUç æ|^



Melville, New York, % , ,
AIP | CONFERENCE PROCEEDINGS ■ %&

Authorization to photocopy items for internal or personal use, beyond the free copying permitted under the 1978 U.S. Copyright Law (see statement below), is granted by the American Institute of Physics for users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided that the base fee of \$30.00 per copy is paid directly to CCC, 222 Rosewood Drive, Danvers, MA 01923, USA: <http://www.copyright.com>. For those organizations that have been granted a photocopy license by CCC, a separate system of payment has been arranged. The fee code for users of the Transactional Reporting Services is: 0094-4243/99/\$30.00.

© 1999 American Institute of Physics

No claim is made to original U.S. Government works.

Permission is granted to quote from the AIP Conference Proceedings with the customary acknowledgment of the source. Republication of an article or portions thereof (e.g., extensive excerpts, figures, tables, etc.) in original form or in translation, as well as other types of reuse (e.g., in course packs) require formal permission from AIP and may be subject to fees. As a courtesy, the author of the original proceedings article should be informed of any request for republication/reuse. Permission may be obtained online using RightsLink. Locate the article online at <http://proceedings.aip.org>, then simply click on the RightsLink icon/“Permissions/Reprints” link found in the article abstract. You may also address requests to: AIP Office of Rights and Permissions, Suite 1N01, 2 Huntington Quadrangle, Melville, NY 11747-4502, USA; Fax: 516-576-2450; Tel.: 516-576-2268; E-mail: rights@aip.org.

ISBN 0-7620-4243-9

ISSN 0094-243X

Printed in the United States of America

TABLE OF CONTENTS

Vibrational Dynamics and Reactivity of Crowded Molecules	2
<i>Dudley R. Herschbach</i>	
Molecular Beam Studies on the Dynamics of Primary Photodissociation Processes	3
<i>Yuan T. Lee</i>	
Photo-Dissociation, -Reaction, -Desorption and -Ejection of Absorbed Species	4
<i>John C. Polanyi</i>	
Solid State Lasers - The Next 10 Years	6
<i>Robert L. Byer</i>	
Laser Generation of VUV Radiation and Spectra of Rare Gas Excimers	7
<i>Boris P. Stoicheff</i>	
Green Infrared-Pumped Erbium Upconversion Lasers	8
<i>W. Lenth, A. J. Silversmith, R. M. Macfarlane</i>	
Modeling the Dynamics of Titanium Sapphire Lasers	13
<i>A. M. Buoncristiani, C. H. Bair, John Sweetits, Lila F. Roberts</i>	
Laser Diode Pumped 1.07μ and 535 nm Nd:BEL	17
<i>Richard Scheps, Joseph Myers, E. J. Schimitschek, D. F. Heller</i>	
750 mW, 1.06 μm, CW TEM₀₀ Output from a Nd:YVO₄ Laser End Pumped by a Single 20 Stripe Diode Array	20
<i>R. A. Fields, M. Birnbaum, C. L. Fincher, J. Berger, D. F. Welch, D. R. Scifres, W. Streifer</i>	
A Tunable, Nd-doped Lithium Niobate Laser at 1084 Nm	23
<i>L. D. Schearer, M. Leduc</i>	
Study of Repeated Q-Switched Train Pulse Nd: YAG Laser	26
<i>De-Cai Sun, Xing Wu, Jian-Quang Yao</i>	
Resonator Optimization of a CW Mode-locked Nd:YLF Laser	29
<i>Herman Vanherzeele</i>	
Recent Progresss in Frequency Stabilization of Diode Laser	32
<i>T. Yabuzaki, M. Kitano</i>	
IR Diode Lasers Made by Molecular Beam Epitaxy of PbEuSe	38
<i>M. Tacke, P. Norton, H. Böttner, A. Lambrecht, H. M. Preier</i>	
High-speed Modulation of Semiconductor Diode Lasers: Effects of Deep-level Traps	41
<i>E. Bourkoff, X. Y. Liu, T. L. Worchesky</i>	
Ultrashort Pulse High Intensity Laser Illumination of a Simple Metal	44
<i>H. M. Milchberg, R. R. Freeman, S. C. Davey</i>	
Production of Intense, Coherent, Tunable Narrow-Band Lyman-Alpha Radiation	49
<i>R. S. Turley, R. A. McFarlane, D. G. Steel, J. Remillard</i>	
Study of Soft-X-Ray Generation by Laser-heating Solid and Gaseous Ta Plasmas with Subpicosecond Pulses	52
<i>H. W. K. Tom, O. R. Wood II</i>	
Short-Wavelength Lasing and Superfluorescence from Channeled Beams	56
<i>G. Kurizki</i>	
High-repetition Studies of the XeCl Laser Comparing Inductively Stabilized and Normal Shaped Electrodes	59
<i>M. Sentis, R. C. Sze, F. Hommeau, B. Forestier, B. Fontaine</i>	
Progress in the Gamma-Ray Laser Program at Texas 1: Flash X-Ray Techniques for Pumping Nuclear Materials	62
<i>F. Davanloo, T. S. Bowen, J. J. Coogan, R. K. Krause, C. B. Collins</i>	
Progress in the Gamma-Ray Laser Program at Texas 2: Coherent Techniques for Pumping a Gamma-Ray Laser	65
<i>S. S. Wagal, P. W. Reittinger, T. W. Sinor, C. B. Collins</i>	
Progress in the Gamma-Ray Laser Program at Texas 3: Observation of Nuclear Fluorescence	68
<i>J. Anderson, Y. Paiss, C. D. Eberhard, C. B. Collins</i>	
Studies of the Ar/Xe Laser using Different Pumping Techniques	71
<i>B. L. Wexler, A. Suda, B. J. Feldman, K. Riley</i>	
Free Electron Laser Amplifiers in the High Gain Compton Regime with Variable Wigglers	74
<i>Kenneth R. Hartzell Jr.</i>	
Fiber-Optic Ring Laser	77
<i>M. V. Iverson, G. L. Vick</i>	
Hard-core Flashlamp for Blue-green Laser Excitation	81
<i>Kwang S. Han, Jae K. Lee, Ja H. Lee</i>	
Nonresonant Operation of Two-transition Lasers in an Inhomogeneously Broadened Medium	84
<i>D. L. Lin, S. G. Sun</i>	
Dynamics of Coupled Electron-Nucleon Motion in a Laser Field	87
<i>F. X. Hartmann, K. K. Garcia, J. K. Munro Jr., D. W. Noid</i>	
Synthesis of a Volatile Compound of the (2-) Ho-160 Nuclear Isomer	93
<i>F. X. Hartmann, R. A. Naumann</i>	
Resonant Gain of Optically Pumped Far Infrared Raman Lasers	96
<i>Jagdish Rai, Jerald R. Izatt</i>	
A Kinetic Model for a Solar-pumped Iodine Laser	99
<i>L. V. Stock, J. W. Wilson</i>	

Laser Instrumentation for Multi-mode Gravitational Radiation Detectors	103
<i>Jean-Paul Richard</i>	
Langmuir Probing Studies of UV-Photoionized CO₂ Laser Mixtures	106
<i>Y. Z. Wang</i>	
High-Power, Continuously Solar Pumped and Q-Switched Iodine Laser	109
<i>J. H. Lee, D. H. Humes, W. R. Weaver, B. M. Tabibi</i>	
Recent Activities in Cars at Onera	114
<i>J. P. Taran</i>	
Extrarresonant Stimulated Rayleigh Scattering from a Two-level System Interacting with Two Intense Fields	121
<i>H. Friedmann, A. D. Wilson-Gordon</i>	
Competing Non-linear and Cooperative Light Emissions	124
<i>K. -J. Boller, H. -J. Lau, J. Sparbier, P. E. Toschek</i>	
Second Harmonic Generation in Mercury Vapor	127
<i>Yen-Chu Hsu, Chin-Mei Yang, Bor-Chen Chang</i>	
Absolute Rate Measurements of Two-photon Process of Gases, Liquids, and Solids	130
<i>C. H. Chen, M. P. McCann, M. G. Payne</i>	
Measurement of Transition Moments Between Molecular Excited Electronic States Using the Autler-townes Effect	133
<i>A. M. F. Lau, D. W. Chandler, M. A. Quesada, D. H. Parker</i>	
Stimulated Brillouin Scattering Reflectivities with a Dual Spectral-line Pump	136
<i>Ruth Ann Mullen, R. C. Lind, G. C. Valley</i>	
The Suppression of Stimulated Hyper-raman Emission in Na Due to Parametric Four-wave Mixing	139
<i>M. A. Moore, W. R. Garrett, M. G. Payne</i>	
Resonance Hyper-raman Scattering in the Gas Phase	142
<i>Y. C. Chung, L. D. Ziegler</i>	
Control of Raman-like Coherent On-resonant Solitons	145
<i>Farrés P. Mattar, D. Kaup, George R. Harrison</i>	
Atomic Response to Bichromatic Crossed-beam Field	155
<i>Wihelmus M. Ruyten, Lloyd M. Davis, Christian Parigger, Dennis R. Keefer</i>	
Observation of Anti-Stokes-Stimulated Raman Scattering and Two-photon Emission in Lithium and Sodium Vapors	158
<i>F. Z. Chen, C. Y. Robert Wu, T. S. Yih, H. H. Wu, Y. C. Hsu, K. C. Lin</i>	
Near IR Emission in Sodium Vapor Under Multiple Excitations	161
<i>T. S. Yih, H. H. Wu, Y. C. Hsu, Z. C. Lin</i>	
Transient Response of a Saturated Two-level System in Absorption and Stimulated Emission to a Weak Probing Field	164
<i>C. J. Hsu</i>	
Wave-mixing Processes in Sodium-potassium Vapor	167
<i>B. K. Clark, M. Masters, J. Huennekens</i>	
Nonlinear Optical Properties of Strained GaAs-in_xGa_{1-x} As Multiple Quantum Well Structures Using a Titanium Sapphire Laser Probe	170
<i>K. Aron, G. Hansen, R. Stone, R. Lytel, W. W. Anderson</i>	
Amplified Spontaneous Emission in Surface-emitting Semiconductor Lasers	174
<i>J. Khurgin, D. A. Davids</i>	
1.06 μm Nanosecond Laser Amplification Via Degenerate Multiwave Mixings in Silicon	180
<i>I. C. Khoo, R. R. Michael, T. H. Liu</i>	
Real Time Phonon Kinetics in Calcite Between 300 K and 5 K	183
<i>R. Dorsinville, P. J. Delfyett, R. R. Alfano</i>	
Nonlinear Absorption of CO₂ Laser Radiation in P-Type InSb	186
<i>R. B. James, Y. C. Chang, D. L. Smith</i>	
High-efficiency Frequency Conversion of IR Lasers with ZnGeP₂ and CdGeAs₂	190
<i>Yu. M. Andreev, P. P. Geiko, V. V. Zuev</i>	
Gas Analysis Using CO₂ Laser Frequency Converters	193
<i>Yu. M. Andreev, P. P. Geiko, V. V. Zuev, O. A. Romanovskii</i>	
Observations on Second Harmonic Generation in Merocyanines	196
<i>R. G. S. Pong, C. L. Marquardt, James S. Shirk</i>	
Nonlinear Optical Effects Due to IR Induced Photoisomerization and Photoorientation	199
<i>James S. Shirk</i>	
Optical Generation of Coherent Surface Acoustic Waves: A New Probe of Surface Dynamics and Structure	201
<i>J. J. Kasinski, L. Gomez-Jahn, R. J. D. Miller</i>	
Quantum Fluctuations in the Stimulated Raman Scattering Line Width	204
<i>D. C. Macpherson, J. L. Carlsten</i>	
Enhanced Nonlinear Processes by Microparticle Surface Modes in Nonlinear Media	207
<i>T. P. Shen, D. N. Rogovin</i>	
Theory of Nonlinear Optics in Droplets	209
<i>G. Kurizki</i>	
Surface-Polariton Enhanced Smith-Purcell Radiation from Doped Semiconductors	212
<i>N. E. Glass</i>	
Multi-frequency Conversions Using One Biaxial Crystal KTiOPO₄	215
<i>Decai Sun, Xing Wu, Jianquan Yao</i>	

Coupled Pair of Particles in a Mean Field for a Cubic Particle Composite	218
<i>T. P. Shen</i>	
Results of Several Methods of Frequency Mixing in β-BaB₂O₄ to Attain the Wavelength Region 197 NM to 189 NM	221
<i>W. Muckenheim, P. Lokai, B. Burghardt, D. Basting, M. F. Essary</i>	
Collision-induced Gratings in Four-wave Mixing Oscillators	224
<i>Gilbert Grynberg</i>	
Four-wave Mixing Spectroscopy of State Selective Collisions in Gases and Solids	230
<i>Juan F. Lam</i>	
Phase Conjugation Calculations and Experiments	236
<i>K. Leung, R. Holmes, A. Flusberg</i>	
Self-seeded Brillouin Pulse Compression	241
<i>Gabriel G. Lombardi, H. Komine, S. J. Brosnan</i>	
Statistical Limits on Beam Combination by Stimulated Brillouin Scattering	243
<i>Joel Falk, Morton Kanefsky, Paul Suni</i>	
Beam Coupling and Self-pulsations in Self-pumped BaTiO₃	246
<i>Putcha Venkateswarlu, H. Jagannath, M. C. George, A. Miahnahri</i>	
Field and Pressure Induced Four-wave Mixing Line Shapes	249
<i>W. M. Schreiber, N. Chencinski, A. M. Levine, A. N. Weizmann, Yehiam Prior</i>	
Four-wave Mixing and Thermal Noise	253
<i>R. McGraw, D. N. Rogovin</i>	
Higher-order Squeezing of Quantum Electromagnetic Field in Non-degenerate Parametric Down Conversion	256
<i>Xizeng Li, Ying Shan</i>	
Collision, Fluctuation, and Field-induced Extra Resonances	259
<i>Yehiam Prior</i>	
Resonances in Nonlinear Mixing Due to Dephasing Induced by Pump-probe Fluctuations	266
<i>G. S. Agarwal</i>	
Dephasing-induced Coherences: Higher-order Selection Rules and Experiments in a Magnetic Field	272
<i>Larry A. Rahn, Rick Trebino</i>	
A New Nonlinear-optical Perturbation Expansion and Diagrammatic Approach	275
<i>Rick Trebino</i>	
Understanding the Dynamic Behavior of Molecular Vibrational States	280
<i>T. G. Kreutz, G. W. Flynn</i>	
Continuous Stopping and Trapping of Neutral Atoms	290
<i>G. P. Lafyatis, V. S. Baganato, A. G. Martin, K. Helmersson, D. E. Pritchard</i>	
Observation of Associative Ionization of Ultra-cold Laser-trapped Sodium Atoms	295
<i>P. L. Gould, P. D. Lett, W. D. Phillips, P. S. Julienne, H. R. Thorsheim, J. Weiner</i>	
Quantum Optics Experiments with a Single Ion	298
<i>R. G. Hulet, J. C. Bergquist, W. M. Itano, J. J. Bollinger, C. H. Manney, D. J. Wineland</i>	
Proposal for Magnetic Trapping of Neutral ²³S Helium	304
<i>Harold Metcalf</i>	
Theory of Collision-induced Optical Trap Loss	308
<i>P. S. Julienne, S. H. Pan, H. R. Thorsheim, J. Weiner</i>	
Wavelength and Isotope Shifts in the Mg I Resonance Line	311
<i>N. Beverini, E. Maccioni, D. Pereira, F. Strumia, G. Vissani, Yu-Zhi Wang</i>	
A New Technique to Study Rydberg States by Multiphoton Ionization Spectroscopy	314
<i>R. D. Verma, Alak Chanda</i>	
High Precision CW Laser Measurement of the 1S-2S Interval in Atomic Hydrogen and Deuterium	319
<i>E. A. Hinds, M. G. Boshier, P. E. G. Baird, C. J. Foot, M. D. Plimmer, D. N. Stacey, D. A. Tate, G. K. Woodgate, J. B. Swan, D. M. Warrington</i>	
The Autler-Townes Effect in Hydrogen at Low Pressure	323
<i>Albert M. F. Lau</i>	
Enhancement of High-order Many-photon Absorption Processes by Broadband Noise	326
<i>J. E. Bayfield, D. W. Sokol</i>	
Two-Photon (VUV & Visible) Resonant Ionization Spectroscopy of Atoms and Molecules	329
<i>M. P. McCann, C. H. Chen, M. G. Payne</i>	
Precise Multiphoton Spectroscopy of H₂	331
<i>E. E. Eyler, J. M. Gilligan, E. McCormack</i>	
High-order Multiphoton Ionization Photoelectron Spectroscopy of NO	334
<i>H. S. Carman Jr., R. N. Compton</i>	
Resonance-enhanced Multiphoton Ionization Spectroscopy of CGCl₂ and CDCl₂	337
<i>Jeffrey W. Hudgens, George R. Long</i>	
Resonance-enhanced Multiphoton Ionization Spectra of SiCl Between 430–520 NM	340
<i>Russell D. Johnson III, Jeffrey W. Hudgens</i>	
Three-photon Ionization in Laser-excited Sodium Beam	343
<i>A. Vellante, L. J. Qin, F. Giammanco, E. Arimondo</i>	
State Mixing in Collisions Involving Highly Excited Barium Atoms	346
<i>M. Allegrini, E. Arimondo, E. Menchi, C. E. Burkhardt, M. Ciocca, W. P. Garver, S. Gozzini, J. J. Leventhal, J. D. Kelley</i>	
Polarization and Doppler Measurements of CN Radicals Formed in the 210 NM Photolysis of BrCN	350
<i>A. Paul, I. McLaren, W. H. Fink, W. M. Jackson</i>	

Statistical Analysis of the Microwave-optical Double Resonance Spectra of NO₂: Ergodicity Without Level Repulsion?	354
<i>Kevin K. Lehmann, Stephen L. Coy</i>	
Observation of Infrared Rotation-Vibration Transitions of HNO-	357
<i>Harold C. Miller, John W. Farley</i>	
Vibrational Autoionization and Fano-Antiresonance in Rydberg Series of Naphthlene	359
<i>Jack A. Syage, John R. Wessel</i>	
Diode Laser Kinetic Spectroscopy	362
<i>D. R. Lander, C. B. Dane, R. F. Curl, G. P. Glass, F. K. Tittel</i>	
Mode Specific Vibrational Relaxation in Weakly Bound Binary Complexes	365
<i>R. E. Miller</i>	
Optogalvanic Signal in the B-X System of Hgbr: Effect of Discharge Voltage and Laser Power	372
<i>V. Kumar, A. K. Rai, D. K. Rai</i>	
Collisionally Induced Absorption in the Calcium-Rare Gas Complex Near 4575 Å	375
<i>J. Coutts, S. K. Peck, J. Cooper</i>	
Far Wing Laser Absorption As a Probe of Reactive Collision Dynamics	378
<i>P. D. Kleiber, A. M. Lyyra, K. M. Sando, A. K. Fletcher, W. C. Stwalley</i>	
Emission and Absorption Spectra of the HgZn Excimer	382
<i>J. Supronowicz, E. Hegazi, G. Chambaud, J. B. Atkinson, W. E. Baylis, L. Krause</i>	
Laser-induced Fluorescence of the HgZn Excimer: The 460 Nm Band	386
<i>J. Supronowicz, E. Hegazi, J. B. Atkinson, L. Krause</i>	
Observation of Emission from Autoionizing States of Li₂	389
<i>T. C. Chu, C. Y. Robert Wu</i>	
A Spectroscopic Study of the 1¹g State of ⁷li₂	393
<i>R. A. Bernheim, L. P. Gold, D. A. Miller, P. D. Tripodi</i>	
Photoelectron Spectrum of Gas Phase Cu₂	396
<i>A. D. Sappes, J. Harrington, J. C. Weisshaar</i>	
Photoelectron Spectrum of Gas Phase TiO	399
<i>A. D. Sappes, J. Harrington, G. Eiden, J. C. Weisshaar</i>	
Using Diode Lasers for Atmospheric Composition Control	402
<i>V. I. Astakhov, V. V. Galaktionov, A. A. Karpukhin, A. Yu. Tishchenko, V. U. Khattatov</i>	
Laser-induced Grating Spectroscopy of Ions in Solids	406
<i>Richard C. Powell</i>	
Excited State Absorption of Sm²⁺ in SrF₂	413
<i>Stephen A. Payne, L. L. Chase, William F. Krupke</i>	
Statistical Fine Structure in Inhomogeneously Broadened Absorption Lines in Solids	419
<i>W. E. Moerner, T. P. Carter</i>	
High-resolution Spectroscopy of Cr³⁺ Ions in Solids	425
<i>B. Henderson, K. P. O'Donnell, M. Yamaga, B. Cockayne, M. J. P. Payne</i>	
Optical Transitions in Cr³⁺-doped Lamgal₁₁O₁₉, A New Potential Vibronic Laser Material	431
<i>F. M. Michel-Calandini</i>	
Fluorescence Dynamics in Some Solid-state Laser Materials Emitting in the Infrared Region: Ho³⁺ Doped LiYF₄ Single Crystals and Fluoride Glasses	439
<i>J. Rubin, A. Brenier, R. Moncorgé, C. Pédrini, B. Moine, G. Boulon, J. L. Adam, J. Lucas, J. Y. Henry</i>	
Raman Scattering from Coupled Lo Phonon-Plasmon Modes in P-GaAs	442
<i>K. Wan, J. F. Young, R. L. S. Devine, W. T. Moore, A. J. Springthorpe, P. Mandeville</i>	
Memory Effects on Infrared Adsorbate Spectra	445
<i>Henk F. Arnoldus, Thomas F. George</i>	
A New Technique for the Spectroscopic Analysis of Insulating Crystal Fibers	448
<i>C. E. Byvik, A. M. Buoncristiani</i>	
Optical Second-harmonic Generation from Semiconductor Surfaces	452
<i>T. F. Heinz, M. M. T. Loy</i>	
Probing Surface Electronic Structure of Ionic Crystals by Second Harmonic Generation and Laser-induced Desorption	460
<i>E. Matthias, J. Reif, P. Tepper, H. B. Nielsen, A. Rosén, E. Westin</i>	
Time-resolved Study of Laser-induced Disorder of Si Surfaces	467
<i>H. W. K. Tom, G. D. Aumiller, C. H. Brito-Cruz</i>	
Chemistry, Structures, Dynamics and Kinetics of Adsorbates on Surfaces by Fourier Transform Infrared Spectroscopy	471
<i>Y. J. Chabal</i>	
Optical Second Harmonic Generation Study on Surfactant Monolayer: Molecular Orientation Dependence on the Chain Length	477
<i>Mahn Won Kim, Su-Nin Liu</i>	
Optical and Microwave Propagation in Random Dielectric and Metallic Media	481
<i>A. Z. Genack, L. A. Ferrari, J. Zhu, N. Garcia, J. M. Drake</i>	
Raman Solitons in Homogeneously and Inhomogeneously Broadened Media	484
<i>Kai J. Druhl</i>	
Effects of Medium Saturation on the Propagation of Raman Solitons	487
<i>Christian J. Tourenne, Kai J. Druhl</i>	

Propagation of a Laser Beam Through Self-induced Turbulence	490
<i>Snirish M. Chitanvis</i>	
Cloud and Water-surface Diagnostics Using an Airborne Polarization Lidar	493
<i>I. E. Penner, I. V. Samokhvalov, V. S. Shamanaev, V. E. Zuev</i>	
Potentialities of Adaptive Phase Correction of Thermal Distortions in High-power Laser Beams	496
<i>V. E. Zuev, P. A. Konyaev, V. P. Lukin</i>	
Transition from Superfluorescence (SF) to Amplified Spontaneous Emission (ASE): A Computational Experiment	499
<i>Farrès P. Mattar</i>	
Rabi-Side Bands Generation in Optically Thick Medium	504
<i>F. P. Mattar, P. Berman</i>	
Double Self-induced-transparency (SIT) in Three-level Absorbers	517
<i>F. P. Mattar, J. A. Deletrez, J. Teichmann, J. P. Babuel-Peyrissac</i>	
Transverse On-resonance Asymptotic Reshaping in Coherent Probe Soliton Formation in a Three-level System	524
<i>Farrès P. Mattar</i>	
Transverse On-resonance Reshaping in Coherent Pump Soliton Asymptotic Evolution in a Three-level System	530
<i>Farrès P. Mattar</i>	
Physical Mechanisms in Coherent On-resonance Propagation of Two Different-wavelength Beams in a Three-level System	537
<i>Farrès P. Mattar</i>	
On-resonance Diffraction-induced Phase in Two-fields Three-level Coherent Propagation	548
<i>J. Teichmann, F. P. Mattar</i>	
Propagation of CO₂-laser Radiation Pulses in a Cloud Medium	554
<i>R. Kh. Almaev, L. P. Semenov, A. G. Slesarev, O. A. Volkovitsky</i>	
Propagation of a Pulse Train of CO₂ Laser Radiation with Divergence Through a Cloud	557
<i>O. A. Volkovitsky</i>	
Influence of Raman Self-pumping on Fundamental Solitons in Fibers	561
<i>Lin-Jie Qu, Shu-Sheng Xie, Shi-Chen Li</i>	
Probing Gas-surface Scattering by Laser Multiphoton Ionization	566
<i>G. O. Sitz, A. C. Kummel, R. N. Zare</i>	
Photofragmentation Dynamics of ICI-Rare Gas Van Der Waals Complexes	567
<i>Janet C. Drobits, John M. Skene, Marsha I. Lester</i>	
Investigation of the Transition State Region of Neutral Bimolecular Reactions by Negative Ion Photodetachment	573
<i>T. Kitsopoulos, R. B. Metz, A. Weaver, D. M. Neumark</i>	
Laser-assisted Chemistry in the Reaction of Mg(¹S) with CO₂ to Yield MgO(B¹Σ⁺)	577
<i>Joseph J. Belbruno, George A. Raiche</i>	
Photofragmentation of Semiconductor Positive Cluster Ions	580
<i>Q. Zhang, Y. Liu, R. F. Curl, F. K. Tittel, R. E. Smalley</i>	
Cooperative Fluorescence As a Probe of Collision and Fragmentation Dynamics	583
<i>G. Kurizki, G. Hose, A. Ben Reuven</i>	
An Advanced Airborne Photofragmentation/Two-Photon Laser-induced Fluorescence Instrument for the in Situ Detection of the Atmospheric Trace Gas Species of NO, NO₂, NO_y, NH₃, and SO₂	587
<i>J. Bradshaw, S. Sandholm, C. Van Dijk, M. Rodgers, D. Davis</i>	
Photodissociation of Rare Gas Clusters Ions: Ar₃⁺	590
<i>C. R. Albertoni, R. Kuhn, H. W. Sarkas, A. W. Castleman Jr.</i>	
Laser-induced Fragmentation of Van Der Waals Clusters Involving Large Aromatic Molecules	593
<i>J. Jefferson Babbitt, Andrew J. Kaziska, Andrea L. Motyka, Stacey A. Wittmeyer, Michael R. Topp</i>	
Time-resolved FTIR Emission Studies of Molecular Photofragmentation Initiated by a High Repetition Rate Excimer Laser	596
<i>T. Rick Fletcher, Stephen R. Leone</i>	
Subpicosecond Excimer-Formation Dynamics in Organic Molecular Crystals	599
<i>Leah Ruby Williams, Keith A. Nelson</i>	
Directional Photodissociation Dynamics of Alkyl Nitrites and Nitrosamines at 250 and 350 NM	602
<i>E. Radian, D. Schwarz-Lavi, R. Lavi, I. Bar, S. Rosenwaks</i>	
Intracavity Laser Spectroscopy of Reactive Intermediates in the CVD of Silicon Containing Films	605
<i>J. J. O'Brien, D. C. Miller, G. H. Atkinson</i>	
Photodecomposition of CO₂ by 193 nm Radiation	610
<i>W. T. Hill III, B. P. Turner</i>	
Matching and Optimizing of the Experimental Parameters for Synthesis of Si₃N₄ by Laser	613
<i>Daohuo Li</i>	
Photodissociation of Fe(CO)₅ at 193 nm	616
<i>U. Ray, G. Bandukwala, B. K. Venkataraman, S. L. Brandow, Z. Zhang, M. F. Vernon</i>	
Multiphoton Ionization and Fragmentation Study of Acetone Using 308 Nm Laser Radiation	619
<i>Houxiang Liu, Shutao Li, Jingcheng Han, Rong Zhu, Yifu Guan, Cunkai Wu</i>	
Energy Transfer Studies with Lasers	622
<i>Ralph E. Weston Jr.</i>	
High Resolution Sub-doppler Experiments on Benzene	628
<i>E. W. Schlag, H. J. Neusser, E. Riedle</i>	
Evidence for Dynamical Solvent Dielectric Effects: Photoisomerization of Stilbenes	634
<i>D. M. Zeglinski, D. H. Waldeck</i>	

A New Method for Probing Highly Vibrationally Excited Molecules	637
<i>Constantine Douketis, James P. Reilly</i>	
Dynamics of the IR Laser Induced Geometrical Rearrangement of 2-fluoroethanol in Solid Argon at 11 K	644
<i>Zakya H. Kafafi, Charles L. Marquardt, James S. Shirk</i>	
Exchange Reactions of Atomic Hydrogen with Acetylene and Ethylene	647
<i>S. Satyapal, G. Johnston, J. Park, R. Bershno</i>	
Isotope Effects on Rapid Vibrational Deactivation of Laser-excited Nitrous Oxide by Sulfur Hexafluoride	650
<i>K. L. McNesby, M. C. Longuemare, R. D. Bates Jr.</i>	
Reactions of He₂⁺ and He(2³S) with Selected Atomic and Molecular Species	653
<i>J. M. Pouvlesle, A. Khacef, J. Stevefelt, H. Jahani, V. T. Gylys, C. B. Collins</i>	
Intramolecular Proton Transfer in Asymmetric Double Minimum Potential Functions	656
<i>G. D. Gillispie</i>	
Electronic Quenching and Fluorescence Lifetime of the Triatomic Radical NCN (A³Π_u)	659
<i>Gregory P. Smith, Richard A. Copeland, David R. Crosley</i>	
Extraction of the Centre-of-mass Differential Cross Section from Crossed Laser Molecular Beam Time of Flight Data Using the Inverse Quadrature Method	662
<i>G. Bandukwalla, M. Vernon</i>	
Laser Spectra from Human Normal and Tumor Lung and Breast Tissues	665
<i>R. R. Alfano, G. C. Tang, Asima Pradhan, Michael Bleich, Daniel S. J. Choy, S. J. Wahl</i>	
Vibrational Energy Relaxation Processes in Heme Proteins	671
<i>L. Genberg, F. Heisel, G. McLendon, R. J. Dwayne Miller</i>	
The Structure and Dynamics of Molecular Liquids Probed with Femtosecond Optical Kerr Effect Spectroscopy	674
<i>Dale McMorrow, William T. Lotshaw, Geraldine A. Kenney-Wallace</i>	
Molecular Dynamics in Pure and Mixed Liquids Probed by Femtosecond Time-resolved Impulsive Stimulated Scattering	682
<i>S. Ruhman, Bern Kohler, Alan G. Joly, Keith A. Nelson</i>	
Direct Structural Characterization of Charge Localization in Metal to Ligand Charge Transfer Complexes	688
<i>L. K. Orman, D. R. Anderson, J. B. Hopkins</i>	
Rotational Reorientation and Isomerization of Trans-Stilbene	691
<i>S. K. Kim, S. H. Courtney, G. R. Fleming</i>	
Enhancement of Ultrafast Supercontinuum Generation in Water by Cations	694
<i>P. P. Ho, T. Jimbo, Q. X. Li, Q. Z. Wang, V. Caplan, R. R. Alfano</i>	
Picosecond Pump-probe Studies of Energy Relaxation in Aggregates of Pseudoisocyanine Adsorbed on Colloidal Silica	697
<i>Edward L. Quitevis, Miin-Liang Horng, Sun-Yung Chen</i>	
Spectral and Temporal Investigation of Cross-phase Modulation Effects on Picosecond Pulses in Singlemode Optical Fibers	700
<i>P. L. Baldeck, F. Raccach, R. Garuthara, R. R. Alfano</i>	
Picosecond Dynamics of Electron Transfer at Semiconductor Liquid Junctions	703
<i>J. J. Kasinski, L. Gomez-Jahn, L. Min, Q. Bao, R. J. Dwayne Miller</i>	
Time-resolved Studies of Solvation	706
<i>John D. Simon, Shyh-Gang Su</i>	
Linear and Nonlinear Resonance Raman Studies of Subpicosecond Photodissociation Dynamics	709
<i>L. D. Ziegler, Y. C. Chung</i>	
Ultrafast Electron Transfer: The Role of Solvent Motion	712
<i>P. F. Barbara, M. A. Kahlow, W. Jarzeba</i>	
Picosecond Raman Measurements of Intraligand Electron Transfer in Substituted Ru(II) Complexes	715
<i>D. R. Anderson, J. B. Hopkins</i>	
Fluorescence Spectroscopy of Ultrashort-lived States of Aromatic Molecules	718
<i>R. Jefferson Babbitt, Co-Jen Ho, Andrew J. Kaziska, Maria I. Shchuka, Michael R. Topp</i>	
Photodissociation of Cr(CO)₆ in Solution: Solvation Dynamics of Cr(CO)₅	721
<i>John D. Simon, Xiaoliang Xie</i>	
Subpicosecond Emission Spectroscopy in the Ultraviolet by Time Gated Upconversion	724
<i>Paul F. Barbara, Michael A. Kahlow</i>	
Fringe Resolved Third-order Autocorrelation Functions	727
<i>R. Fischer, J. Gauger, J. Tilgner</i>	
A Modular System for Picosecond Spectroscopy	730
<i>N. Kempe</i>	
Picosecond Phase-coherent Optical Pulses	733
<i>William L. Wilson, Amy E. Frost, John T. Fourkas, G. Wäckerle, M. D. Fayer</i>	
Pulsed Laser Photothermal Spectroscopy	738
<i>Stephen E. Bialkowski</i>	
Pulsed Laser Photothermal Techniques for Materials Characterization	744
<i>A. C. Tam</i>	
Numerical Calculation of the Photoacoustic Signal Generated by a Droplet	747
<i>Gerald J. Diebold</i>	
Time-resolved Laser-induced Fluorescence in Low-pressure Flames	750
<i>Karen J. Rensberger, Mark J. Dyer, Michael L. Wise, Richard A. Copeland</i>	
Application of Laser-induced Fluorescence in an Atmospheric-pressure Boron-seeded Flame	753
<i>Greg R. Schneider, Won B. Roh</i>	

Molecular Dynamics of Laser Ablation of a Polymer Coating	756
<i>D. W. Noid, S. K. Gray</i>	
Laser Induced Fluorescence Studies in Flames Via Predissociating States: The O₂ Schumann-runge System	761
<i>A. M. Wodtke, P. Andresen, L. Hüwel</i>	
Polarization Spectroscopy in Analytical Measurements	764
<i>Edward S. Yeung</i>	
Laser Desorption in Front of a Free Jet Nozzle: Distribution of Desorbed Material in the Gas Expansion	770
<i>P. Arrowsmith, M. S. De Vries, H. E. Hunziker, H. R. Wendt</i>	
Direct Measurement of HCL-Aerosol Sticking Coefficient	773
<i>N. A. Abul-Haj, L. R. Martin, D. M. Brenner</i>	
Very High Resolution Saturation Spectroscopy of Lutetium Isotopes Via CW Single-frequency Laser Resonance	
Ionization Mass Spectrometry	776
<i>B. L. Fearey, D. C. Parent, R. A. Keller, C. M. Miller</i>	
Author Index	