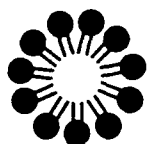
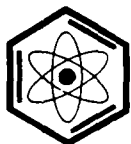




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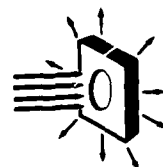
Materials Science and Engineering



1989 Publications



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MATERIALS SCIENCE AND ENGINEERING

1989 Publications

This publication lists results of research conducted on materials by scientists and engineers from the Naval Research Laboratory (NRL) that appeared in the open literature during 1989.

The research was generally conducted within the Materials Science and Component Technology Directorate. However, research at NRL has a multidisciplinary approach; strong collaborative efforts are conducted with other organizational components of the Laboratory.

For the research publications noted here, joint research was conducted with the Condensed Matter and Radiation Sciences Division.

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MATERIALS SCIENCE AND ENGINEERING

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"Alterations in the Stereochemistry of the Kappa- Selective Agonist U50,488 Result in High Affinity Sigma Ligands"

B.R. deCosta, W.D. Bowen, S.B. Hellewell, C.F. George, R.B. Rothman, A.A. Reid, J.M. Walker, A.E. Jacobson, K.C. Rice

Journal of Medicinal Chemistry, 32(8), 1996-2002

"Structure of 2,4,6-Trinitrophenylhydrazine"

J.L. Flippen-Anderson, R.D. Gilardi, C.F. George, A.P. Marchand, P.R. Dave
Acta Crystallographica, C45, 1171-1174

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C.F. George, R.D. Gilardi
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"Structure of a Cage Dimer (I) and a Dimer Ketone (II) Formed via Thermal Reaction of Ethyl 3-Phenyl-2-norbornadiene-carboxylate with Pentacarbonyliron"

J.M. Karle, I.L. Karle
Acta Crystallographica, C45, 1248-1250

"Structure of an Ether Dimer of Deoxydihydroqinghaosu, a Potential Metabolite of the Antimalarial Arteether"

R.D. Gilardi, C.F. George
Acta Crystallographica, C45, 1262-1263

"Structure of Diethyl 3,6-Dihydroxy-11,11-dimethoxypentacyclo [6.5.0.0(4,12).0(5,10).0(9,13)]-tridecane-2,6-diene-2,7-dicarboxylate"

J.L. Flippen-Anderson, R.D. Gilardi, C.F. George, A.P. Marchand, G.M. Reddy
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"Structure of Two Cyano Nitramines (I): 1-Benzylnitrocyamide and (II): 1.4-Nitrocyamidylbutane"

J.L. Flippen-Anderson, R.D. Gilardi, C.F. George
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J.L. Flippen-Anderson, C.F. George, Y. Itoh, A. Brossi, E. Hamel
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"Structure of 3-Benzamido-6,8-dibenzoyl-1,3,5,6,8-pentaazabicyclo(3.2.2.)nonane"

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"Structure of Simple Trichothecene 7 α -Hydroxyscirpene"

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"Structure of 2,4,6-Trinitro-9-oxo-2,4,6,8-tetraaza-1-decanyl Acetate"

J.L. Flippen-Anderson, R.D. Gilardi, C.F. George

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"Structure of 3-Methoxy-2,4-dinitro 2,4-diazapentane"

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"Direct Methods in Protein Crystallography"

J.M. Karle
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S.K. Bhatia, L.C. Shriver-Lake, K.J. Prior, J.H. Georger, J.M. Calvert, R. Bredehorst, F.H. Ligler

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"Radiation-Induced Attenuation in Polarization-Maintaining Fibers: Low Dose Rate Response, Stress and Materials Effects"

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"Self-Trapped Holes in Amorphous Silicon Dioxide"

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D.L. Griscom
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"Electron Spin Resonance Investigations of Defects and Defect Processes in Amorphous Silicon Dioxide"

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"Fusion Splicing of Heavy Metal Fluoride Glass Optical Fibers"

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"Optical and Physical Properties of Calcium Aluminate Glasses with Small Additions of SiO₂ and GeO₂"

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"New Fluorination Reactions of Ammonium Bifluoride"

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"Active Infrared Countermeasure Susceptibility of Rochelle Salt(S)"
F.R. Barone
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"Integrated Optical Mode Converter/Frequency Shifter in Ti:LiTaO₃"
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"Output Beam Steering in a High Reflectivity Brillouin Enhanced Four Wave Mixing Phase Conjugator"
P.S. Lebow
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"High Gain Optical Phase Conjugation"
P.S. Lebow, J.A. Ackerman
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P.S. Lebow
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"Photoinduced Excitations in Semiconducting YBa₂Cu₃O_{7-D}"
J.M. Leng, J.M. Ginder, M.G. Roe, A.J. Epstein, W.E. Farneth, S.I. Shah, E.M. McCarron
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"Missile Signature Measurements at NWC SNORT Track in Support of the AN/AAR-47 Missile Warning Set and Variants"
T.H. May, D.M. Cordray, D. Papcke, D. Johnson, C. Kaufer, D. Reilly, A. Liese, W. Clark, T.H. Cosden
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"Massive Polarons in Large-Gap Polymers"
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"Acceleration and Deformation Measurements using Coherent Laser Radar"
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"Picosecond Photoinduced Exciton Bleaching in Emeraldine Base: Crossover in Decay Mechanisms"
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L.J. Sica
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"Stimulated Emission in Atomic Hydrogen from the Balmer-Transition"
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"Stimulated Anti-Stokes Raman Scattering in Inverted Atomic Selenium"
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"3 Micron Laser Performance of Nd,Ho:YALO₃"
S.R. Bowman, A. Bowman
CLEO/QELS '89, April, Baltimore MD

"A Neodymium YALO Based Blue Communications Transmitter"
S.R. Bowman, B.J. Feldman, J.M. McMahan, A. Bowman
LASERS '89, December, New Orleans LA

"Laser Techniques and Frequency Conversion for a Neodymium Based Blue Communication Transmitter"

S.R. Bowman, B.J. Feldman, J.M.

McMahon, A. Bowman, D. Scarl

Tunable Solid State Lasers Conference, Cape Cod, MA, May

"Stimulated Effects and Optical Resonances in Microspheres"

A.J. Campillo, J.D. Eversole, H.B. Lin

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"Ultra-narrow Linewidth Excimer Laser"

C. Christensen, B.J. Feldman, A.L.

Huston

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"Room Temperature Fluorescence from Arymethly Radicals in Solution"

B. Craig, M. Sonnenschein

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"Ejection of Excimers from the Surface of Solid Argon upon Excitation Self-Trapping"

S.T. Cusi, R.E. Johnson, C.T. Reimann,

J.W. Boring

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"An Optical Isolator at 308 Nm"

J.L. Dexter, D.G. Cooper, L.L. Tankersley,

J. Landry, J.F. Reintjes

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"Narrow-Bandwidth Excimer Laser Operation using Coupled Stable/Unstable Resonators"

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M.T. Duignan, B.J. Feldman, W.

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"Measurement of Beam Quality using Digitized Laser Beam Images"

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"Wavefront Preservation in a Transient Raman Amplifier"

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"Experimental Study of Transient Spontaneous Raman Scattering"

M.D. Duncan, R. Mahon, L.L.

Tankersley, J.F. Reintjes

Optical Society of America Annual

Meeting, October, Orlando FL

"Second Stokes Generation in Hydrogen and Deuterium"

M.D. Duncan, R. Mahon, L.L.

Tankersley, J.F. Reintjes

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Tankersley, J.F. Reintjes

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"Explosive Molecular Ionic Crystals"

W.L. Faust

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"Coherent Laser Radar Measurements on High Velocity Targets"

A.L. Huston, M.G. Roe

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"Efficient Photogeneration of Triplets in Shock Compressed 2,4-Dinitrostilbene"

B.L. Justus, C.D. Merritt, A.J. Campillo

American Physical Society Topical

Conference on Shock Compression of

Condensed Matter, August,

Albuquerque, NM

"Efficient Photogeneration of Triplets in Shock Compressed 2,4-Dinitrostilbene"

B.L. Justus, C.D. Merritt, A.J. Campillo

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"The Effects on Triplets on the Shock Chemistry of 2,4-Dinitrostilbene"

B.L. Justus, C.D. Merritt, A.J. Campillo

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August

"Multiple Order Morphology-Dependent Resonances Observed in Lasting Droplets"
H.B. Lin, J.D. Eversole, A.J. Campillo
CRDEC Scientific Conference of
Obscuration and Aerosol Research,
Aberdeen, MD, June

"Observations of MIE Resonances in Layered Microspheres"
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"Multiple Order Morphology-Dependent Resonances Observed in Lasting Droplets"
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"Pump Replication in Stimulated Raman Scattering"
C.R. Menyuk, G. Hilfer, J.F. Reintjes
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"Ultrafast Shock Induced Uniaxial Strain in a Liquid"
C.D. Merritt, A.L. Huston, B.L. Justus, A.J. Campillo
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"Ultrafast Shock Induced Uniaxial Strain in a Liquid"
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Chemical Physics Letters, **159**, 349-354

"Spatial Holeburning Effects in Distributed Feedback Lasers"
W.S. Rabinovich, B.J. Feldman
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"Above Threshold Mode Discrimination in External Reflector and Phase Shifted Distributed Feedback Lasers"
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"Chemical Reactions in a XeF₂, D₂ Pulsed Chemical Laser"
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"Acoustic Levitation in a Free-Jet Wind Tunnel"
M.E. Seaver, A. Galloway, T.J. Manuccia
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"Measurements of Gain Saturation and Line Competition in an Electron-Beam-Pumped High-Pressure Ar/Xe Laser"
A. Suda, B.L. Wexler, B.J. Feldman, K.J. Riley
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J.E. Tucker, B.L. Wexler, B.J. Feldman
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R.E. Allen, L. Esterowitz
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"Multiple Harmonic Conversion of Pulsed CO₂ Laser Radiation"

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"Far Infrared Magneto-optical Study of Holes and Electrons in Zero-Gap HgTe-CdTe Superlattices"

M. Dobrowolska, T. Wojtowicz, J.K. Fundyna, O.K. Wu, J.R. Meyer, C.A. Hoffman, F.J. Bartoli
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"Electronic Properties of MBE Grown A-Sn_(1-x)Ge_x Alloys"

M.A. Englehardt, H. Hochst, C.A. Hoffman, J.R. Meyer, R.J. Wagner, F.J. Bartoli, J. Menendez
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"Pulsed Laser Emission at 2.3 μ m in a Thulium-Doped Fluorozirconate Fibre"

L. Esterowitz, R.E. Allen, I.D. Aggarwal
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"Spectra and Energy Levels of Tm³⁺:Y₃Al₅O₁₂"

J. Gruber, G.J. Quarles, G. Kintz, L. Esterowitz, M. Hills, R. MacFarlane, C. Morrison, G. Turner
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"Band-Gap Dependent Electron and Hole Transport in P-Type HgTe-CdTe Superlattices"

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- "Negative Energy Gap in HgTe-CdTe Heterostructures with Thick Wells"
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- "Three-Band Transport and Cyclotron Resonance in $-Sn$ and $A-Sn_{(1-x)}Ge_x$ by Molecular Beam"
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- "The Activation of the C-H Bond of Allene by Ground State Atomic Iron"
Z.H. Kafafi, R.S. Pong
6th International Conference on High Temperatures, Chemistry of Inorganic Materials, NIST, Gaithersburg MD, April
- "IR Laser Induced Photo-Orientation of a Metal Water Complex"
Z.H. Kafafi, R.S. Pong, J.S. Shirk
7th Matrix Isolation Spectroscopy Symposium, Noordwykerhout, The Netherlands, July
- "Reactions and Photochemistry of Iron with C_3H_4 :C-H Bond Activation of Allene and Methylacetylene"
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- "Polarized IR Spectroscopy of Photo-oriented 2-Fluoroethanol in Solid Argon: Mechanism of the Mode-Specific Isomerization"
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- "Non-Resonant Third Order Optical Nonlinearities in Phthalocyanines"
J.R. Lindle, F.J. Bartoli, C.A. Hoffman, Z.H. Kafafi, J.S. Shirk, A.W. Snow
CLEO/QELS '89, Baltimore MD, April
- "Nonlinear Optical Properties of Heteroaromatic Ladder Polymers at 1.06 μm "
J.R. Lindle, F.J. Bartoli, C.A. Hoffman, O.K. Kim, J.S. Shirk, Z.H. Kafafi
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- "Degenerate Four-Wave Mixing in Metallophthalocyanines"
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Joint Optical Society/IEEE LEOS Annual Meeting, Orlando FL, October
- "Narrow-Gap II-VI Superlattices: Correlation of Theory with Experiment"
J.R. Meyer
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- "Band-Edge Properties of Hg-Based Superlattices"
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- "Double Hole Cyclotron Resonance in Zero-Gap HgTe-CdTe Superlattices"
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- "Transport Characterization of HgTe/CdTe Superlattice Band Structure"
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- "Site Selective Spectroscopy of Stark Levels in $Tm^{3+}:Y_3Al_5O_{12}$ "
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- "Under Short Title SOCM (S/SAR)"
M.R. Pauli, F.R. Barone, R.D. Moore, C.L. Marquardt, L. Esterowitz
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- "High Efficiency 2.09 μm Flashlamp Pumped Laser"
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- "Differences in Decay Kinetics and Mechanisms of Cr^{3+} Tm^{3+} Energy Transfer Between YSGG and YAG"
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"High Efficiency 2.09 μ m Laser"

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"Efficiency Optimization for a Flashlamp-Pumped Room Temperature 2 μ m Laser"

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"Optically Induced Reorientational Aggregation and the Stability of F²⁺ Color Center Lasers"

I. Schneider, C. Pollock
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"3-D LMS Filter Techniques for Detection of Moving Targets in Cluttered Backgrounds"

D.A. Scribner, I.B. Schwartz, D.A. Ilg, J.P. Havlicek, M.R. Pauli, G.R. Katz, R.G. Priest
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"Determination of Effective Masses in N- and P-Type HgTe-CdTe Superlattices by Shubnikov-De Haas"

D.G. Seiler, G.B. Ward, R.J. Justice, R.J. Koestner, M.W. Goodwin, M.A. Kinch, J.R. Meyer
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"Persistent IR Spectral Holes in Hydrogen Bonded Polymers"

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"Large Third Order Optical Non-Linearities of Metallo-Phthalocyanines at 1.064 μ m"

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R.J. Wagner, J.M. Perez, J.R. Meyer,
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"Nonlinear Optical Coefficients of
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"Analysis of Excess Baseband Noise in
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Noise by Phase-Carrier Homodyning"
T.A. Berkoff, A.D. Kersey, A. Dandridge
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"Interferometric Displacement Sensing by
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T.A. Berkoff, A.D. Kersey
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"Mixing & Detection of RF Signals in a
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F. Bucholtz, D.M. Dagenais, K.P. Koo
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C.H. Bulmer, A.D. Kersey, M. Davies
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Microwaved Loss"
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"Voltage-Length Product for Modal
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"Fiber Superfluorescent Sources for Fiber
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"Response to a Comment by Gomes and
Araujo on Visible Wavelength Amplified
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Doped Optical Fiber Pumped at 1064nm"
T.F. Carruthers, I.N. Duling III, E.J.
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"Visible Wavelength Amplified
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"Near-Infrared Continuum Generation in an Optical Fiber"
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**"Temperature Dependent Positron-
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A handwritten signature in black ink, appearing to read "R. B. Rath". The signature is fluid and cursive, with a horizontal line extending from the end of the name.

Associate Director of Research for
Materials Science and Technology Division