



Gérard Albert Mourou

Home address: 25 Avenue Reille Paris 75014 - France

Birth date: 22.06.1944 at Alberville, Savoie France

CITIZENSHIP: U.S. and FRANCE (Dual Citizenship)

- Directeur IZEST, International Center Zettawatt Exawatt Science and Technology
- Professor Haut College Ecole polytechnique
- A.D. Moore Distinguished University Professor University of Michigan
- Professor Physics University of Nizhny Novgorod

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EDUCATION

B.S., Physics, University of Grenoble, France, 1967

Thèse de 3eme cycle., ParisVI, France, 1970

Thèse d'Etat Physique, University of Paris VI France, 1973

PROFESSIONAL EXPERIENCE

- **Membre de l'US National Academy of Engineering**
- **Membre Etranger de l'Académie des Sciences Russe**
- **Membre Etranger de l'Académie des Sciences Autrichienne**
- **Membre Etranger de l'Académie de Sciences et Lettres Lombarde, Italie**
- **Fellow of the Optical Society of America**
- **Fellow of the IEEE**
- **Professeur Membre du Haut Collège de l'Ecole polytechnique 2010**
- **Professor Ecole polytechnique France 2005-2010**
- **Director Laboratoire d'Optique Appliquée ENSTA/Ecole Polytechnique (France) 2005-2009**

- **Director, Center for Ultrafast Optical Science, a National Science Foundation Science and Technology Center** located at the University of Michigan, 1991-2004 Litterature, Science & Arts, College of Engineering University of Michigan.
- **A.D. Moore Distinguished University Professor**, Department of Electrical Engineering and Computer Sciences, College of Engineering, University of Michigan, Ultrafast Science Laboratory, 1006 IST Building, 2200 Bonisteel, Ann Arbor, Michigan, 48109-2099,
- **Professor**, Institute of Optics, University of Rochester, Rochester, New York, March 1987 - 1989.
- **Division Director**, Ultrafast Science Division, Laboratory for Laser Energetics, Rochester, New York, July 1986 - 1988.
- **Associate Professor**, Institute of Optics, University of Rochester, Rochester, New York, September 1983 - March 1987.
- **Senior Scientist**, Laboratory for Laser Energetics, University of Rochester, Rochester, New York, October 1981 - 1988.
- **Group Leader**, Picosecond Research Group, Laboratory for Laser Energetics, University of Rochester, Rochester, New York, 1979 - 1988.
- **Scientist**, Laboratory for Laser Energetics, University of Rochester, Rochester, New York, 1977 - 1979.
- **Scientist**, Ecole Polytechnique, Paris, France, 1974 - 1977.
- **Postdoctoral Fellowship**, San Diego State University, San Diego, California, 1973 - 1974.
- **Scientific Cooperant**, Université Laval, Quebec, Canada, 1970 - 1973.

AWARDS

- 2018 Physics Nobel Prize recipient
Recipient of the 2018 Arthur L. Schawlow Prize in Laser Science
- Recipient of the Berthold Leibinger 2016 Innovation Prize
- Recipient of the F. Ives/J. Quinn Award 2016 from the OSA
- Chevalier de la Legion d' Honneur République Française July 2012
- Recipient of the Chaire d' Excellence 2012 J. Beaulieu from Institut National Recherche Scientifique (Quebec)
- Recipient of the Einstein Chair 2010 from the Chinese Academy of Science
- Winner of the 2010 Open Grant Competition of the Russian Federation
- Recipient of the 2009 Charles H. Townes Award from the Optical Society of America
- Recipient of the 2007 Grand Prix Carnot from the French National Academy
- Recipient of the 2005 of the Physics of Quantum Electronics Lamb Medal
- Recipient of the 2004 Chaire d' Excellence from the French Minister of Research
- Recipient of the 2004 Quantum Electronic Award from IEEE-LEOS
- Recipient of the 2002 Russel Award from the University of Michigan (Highest Honor from the University)
- Recipient of the 2000 College of Engineering Stephen S. Attwood Excellence in Engineering award for the invention of the Chirped Pulse Amplification technique which opened up the field of Strong-field Physics and medical femtosecond surgery.

- Recipient of the 1999 D. Sarnoff Award from IEEE, for Pioneering contributions to high speed, high intensity optoelectronic measurement techniques, including electro-optic sampling and femtosecond high-voltage introducing the concept of Chirped Pulse Amplification for laser systems to boost optical power peaks to switching
- Recipient of the 1997 H. Edgerton Award from the SPIE, in Recognition of many significant contributions, both scientific and technical, to the Field Ultrafast Phenomena, foremost among these is the invention of Chirped Pulse Amplification, now used throughout the world in Ultrafast Laboratories.
- Recipient of the 1995 R. W. Wood Prize, from the OSA, for Contributions to the field of Ultrafast Optics in particular for bringing the peak power to unprecedented levels
- Honoris Causa Doctorate from the University of Bucharest 2012
- Honoris Causa Doctorate, University Laval 2005
- Honoris causa doctorate, University de Quebec, 1998
- Recipient of the 1991 Research Excellence Award, College of Engineering, University of Michigan
- Named the A. D. Moore Distinguished University Professor of Electrical Engineering and Computer Science, 1995
- Visiting Professor, Technical University of Vienna (Summer) 1996
- Honorary Professor, Xi'an Institute of Optics and Precision Mechanics, Chinese Academy of Sciences, Xi'an, China, 1997
- Academic Advisor, State Key Laboratory of Transient Optics Technology, Xi'an, China, 1997
- Advisory Board Member of the Laboratoire d'Utilization des Lasers Intenses, Ecole Polytechnique, France, 1997
- Advisory Board Member for the Mathematical and Physical Sciences Directorate of the National Science Foundation, 1997
- Advisory Board Member for the NSF Nuclear/High Energy Physics, National Science Foundation Center of Excellence, 1997
- Advisory Board Member for the Center of Theoretical Optics
- Member of Editorial Board of *Laser Focus*
- Member of the Board of Editors for Applied Physics B
- Professor, Institut National de Recherche Scientifique, Université du Québec, Québec, Canada, 1990
- Visiting Professor, Sept. - Dec. 1994 (sabbatical), University of Tokyo, Japan
- Professor of Physics - Chaire Municipale, 1994, Université Joseph Fourier at Grenoble, France
- Chevalier de l'ordre des Palmes Académiques

PUBLICATIONS; Publications 387, H index 91 (Google Scholar)

P. Chen and G. Mourou Physical, Phys. Rev. Lett. 118, 045001 (2017) Accelerating Plasma Mirrors to Investigate the Black Hole Information Loss Paradox

M.L. Zhou, X.Q. Yan, G. Mourou, J.A. Wheeler, J.H. Bin, J. Schreiber and T. Tajima, Phys. Plasmas **23**. 0431129, 2016) Proton acceleration by single cycle laser pulses offers a novel mono energetic and stable operating regime

Demonstration designs for the remediation of space debris from the International Space Station, T.Ebisuzaki, M. Quinn , G. Mourou, Acta Astronautica 112. 2015

Design and properties of a coherent amplifying network laser,

- R. Soulard, M. Quinn, G. Mourou, *Applied Optics* 54 15. 2015
- A. Gonoskov, A. Bashinov, I. Gonoskov, C. Harvey, A. Ilderton, A. Kim, M. Marklund, G. Mourou, and A. Sergeev, *Anomalous Radiative Trapping in Laser Fields of Extreme Intensity*, *Phys. Rev. Lett.* **113**, 014801 – July 2014
- R. Soulard, M. Quinn, G. Mourou, ICAN: A novel laser architecture for space debris removal, *Acta Astronautica* 105. 2014
- M. Quinn et al, The IZEST Framework, *Euro. Phys. J. Spec. Top.* 223, 6. 2014
- G. Mourou, T. Tajima, M. Quinn, J. Wheeler (eds), Zetta-Exawatt Science and Technology, *Euro. Phys. J. Spec. Top.* 223, 6. 2014
- V.YU. Bychenkov, A.V. Brantov and G. Mourou, Tc-99m production with ultrashort Intense laser pulses, *Laser and Particle Beams* 32, 605 (2014)
- B.M Hegelich, G. Mourou and J. Rafelski, Probing the Quantum Vacuum with ultra intense laser Pulse, *Eur. Phys. J. Special Topics*, 223, 1105 (2014)
- I.V. Sokolov, G.A. Mourou and N.M. Naumova, Effect of radiation reaction on Particle motion and production in IZEST-Strong Field *Eur. Phys. J. Special Topics*, 223, 1045(2014)
- G. Mourou, S. Mironov, E. Khazanov and A. Sergeev, Single cycle thin film compressor opening the door to Zeptosecond-Exawatt Physics, *Eur. Phys. J. Special Topics*, 223, 1181(2014)
- T. Seggebrock, I. Donmair, T. Tajima, G. Mourou and F. Gruner The pulse Intensity-duration Conjecture:Evidence from free-electron lasers, *Prog. Theor. Exp.Phys.* 2014, 013A062
- C. Riconda, S. Weber, L. Lancia, J.-R. Marques, G. A. Mourou, and J. Fuchs, Spectral characteristics of ultra-short laser pulses in plasma amplifiers, *PHYSICS OF PLASMAS* 20, 083115 (2013)
- Gerard Mourou, Bill Brocklesby, Toshiki Tajima, and Jens Limpert, The future is Fiber Accelerators, *Nature Photonics*, Vol.7, 258-261 (2013)
- Antonin Borot, Arnaud Malvache, Xiaowei Chen, Aurelie Jullien, Jean-Paul Geindre, Parick Audebert, G rard Mourou, Fabien Qu r , and Rodrigo Lopez-Martens, Attosecond control of collective electron motion in plasmas, *Nature Physics*, 8, 416-421 (2012)
- Naumova N.M., Sokolov I.V., Nees J.A., Mourou G.A., Radiation back-reaction and pair creation in the interaction of QED-strong laser fields with electron beams, *Proc SPIE* 7994, 799424 (2010).
Published: 2011.
- Sokolov I.V., Naumova N.M., Nees J.A., Mourou G.A., Pair creation in QED-strong pulsed laser fields, *KEK Proceedings* 2010-13, p. 93 (2011).
- G.A. Mourou and T. Tajima, More intense Shorter Pulse, *SCIENCE* VOL 331, 7, p 41, JANUARY (2011)
- Mourou, G. A, Fisch, N. J. Malkin, V. M. ; Toroker, Z.; Khazanov, Khazanov, E. A. ; Sergeev ;Tajima, T, Le Garrec, B. Exawatt-Zettawatt pulse generation and applications, *OPTICS*

Sergey Mironov, Vladimir V. Lozhkarev, Vladislav N. Ginzburg, Ivan V. Yakovlev, Grigory Luchinin, Andrey Shaykin, Efim A. Khazanov, Alexey Babin, Eugeny Novikov, Sergey Fadeev, Alexander M. Sergeev, and Gerard A. Mourou, Second-Harmonic Generation of Super Powerful, Femtosecond Pulses Under Strong Influence of Cubic Nonlinearity, IEEE JOURNAL OF SELECTED TOPICS IN QUANTUM ELECTRONICS, 99, 1 (2010)

Igor V. Sokolov, Natalia M. Naumova, John A. Nees, and Gérard A. Mourou, Pair Creation in QED-Strong Pulsed Laser Fields Interacting with Electron Beams Phys. Rev. Lett. 105, 195005 (2010)

Gérard A. Mourou and Natalia M. Naumova, A Qualitative Introduction to Extreme Light Infrastructure AIP Conf. Proc. 1228, 1 (2010)

Igor V. Sokolov, Natalia M. Naumova, John A. Nees, Victor P. Yanovsky, and Gérard A. Mourou, Radiation back-reaction in relativistically strong and QED-strong pulsed laser fields AIP Conf. Proc. 1228, 305 (2010)

Fedotov, A. M., Narozhny, N. B., Mourou, G., Korn, G., Limitations on the attainable intensity of high power lasers, Phys. Rev. Lett., 105, 080402 (2010).

Igor V. Sokolov, John A. Nees, Victor P. Yanovsky, Natalia M. Naumova and Gerard A. Mourou, Emission and its back-reaction accompanying electron motion in relativistically strong and QED-strong pulsed laser fields, Phys. Rev. E 81, 036412(2010)

V. Sokolov, N. M. Naumova, J. A. Nees, G. A. Mourou, V. P. Yanovsky, Dynamics of Emitting Electrons in Strong Electromagnetic Fields, Phys. Plasmas (2009); arXiv:0904.0405.

A. G. Mordovanakis, J. Easter, N. Naumova, K. Popov, P.-Ed. Masson-Laborde, B. Hou, I. Sokolov, G. Mourou, I. V. Glazyrin, W. Rozmus, V. Bychenkov, J. Nees, and K. Krushelnick, Quasimonoenergetic Electron Beams with Relativistic Energies and Short Duration, from Laser-Solid Interactions at 0.5 kHz, Phys. Rev. Lett. 103, 235001(2009).

T. Schlegel, N. Naumova, V.T. Tikhonchuk, C. Labaune, I.V. Sokolov, G. Mourou, The relativistic laser piston Ponderomotive ion Acceleration in dense plasmas using ultra-intense laser pulses, Phys. Plasmas, 16 (2009)

N. MN. Naumova, I. V. Sokolov, V. T. Tikhonchuk, T. Schlegel, J. A. Nees, C. Labaune, V. P. Yanovsky, and G. A. Mourou, Electron Radiation Self-Force and Ion Acceleration at Super-High Laser Intensities, AIP Conf. Proc. 1153 (2009).

N. Naumova, T. Schlegel, V.T. Tikhonchuk, C. Labaune, I.V. Sokolov, G. Mourou, Hole boring in a DT pellet and fast ion ignition with ultraintense laser pulses, Phys. Rev. Lett. 102, 025002 (2009).

- A. Maksimchuk, S. Reed, S. S. Bulanov, V. Chvykov, G. Kalintchenko, T. Matsuoka, C. McGuffey, G. Mourou, N. Naumova, J. Nees, P. Rousseau, V. Yanovsky, K. Krushelnick, N. H. Matlis, S. Kalmykov, G. Shvets, M. C. Downer, C. R. Vane, J. R. Beene, D. Stracener, and D. R. Schultz, Studies of laser wakefield structures and electron acceleration in underdense plasmas, *Phys. Plasmas* 15 (2008).
- N. M. Naumova, C. P. Hauri, J. A. Nees, I. V. Sokolov, R. Lopez-Martens and G. A. Mourou, Towards efficient generation of attosecond pulses from overdense plasma targets, *New J. Phys.* 10 (2008).
- C. Labaune, D. Hulin, A. Galvanauskas, G.A. Mourou, On the feasibility of a fiber-based inertial fusion laser driver, *Optics Communications*, 281, 4075-4080(2008)
- J.B. Jackson, M. Mourou, J.F. Whitaker, I.N. Duling III, S.L. Williamson, M. Menu, and G.A. Mourou, Terahertz Imaging for Non-destructive Evaluation of Mural Paintings, *Optics Communications* 281, 527-532 (2008).
- G. A. Mourou, C. L. Labaune, M. Dunne, N. Naumova and V. Tikhontchuk, Relativistic Laser-Matter Interaction: from Attosecond Pulse Generation to Fast Ignition, *Plasma Phys. Control. Fusion* 49, B667 (2007).
- Aghapi G. Mordovanakis, Kai-Chung Hou, Yu-Chung Chang, Ming-Yuan Cheng, John Nees, Bixue Hou, Anatoly Maksimchuk, Gerard Mourou and Almantas Galvanauskas, Demonstration of fiber-laser produced plasma - source and applications to efficient extreme UV light generation, *Opt. Lett.* 31, 2517-2519 (2006).
- G. Mourou, T. Tajima and S. Bulanov, Optics in the Relativistic Regime, *Review of Modern Physics* 78. Jan-Mar - 2006.
- G. A. Mourou, D. Hulin and A. Galvanauskas, "The road to High Peak Power and High Average Power Laser: Coherent Amplification Network (CAN), AIP Conference Proceedings, Third International Conference on Superstrong Fields in Plasmas, vol. 827, Dimitri Batani and Maurizio Lontano, 152-163 (2006).
- N. Naumova, I. Sokolov, J. Nees, A. Maksimchuk, V. Yanovsky, and G. Mourou, Attosecond Electron Bunches, *Phys. Rev. Lett.* 93, 195003 (2004).
- S. -W. Bahk, P. Rousseau, T. A. Planchon, V. Chvykov, G. Kalintchenko, A. Maksimchuk, G. A. Mourou, and V. Yanovsky, "Generations and characterization of the highest laser intensities (10^{22} W/cm²)," *Opt. Lett.* Vol. 29, No. 24, p2837, Dec 15, 2004.
- N. M. Naumova, J. A. Nees, B. Hou, G. A. Mourou, and I. V. Sokolov, Isolated attosecond pulses generated by relativistic effects in a wavelength-cubed focal volume, *Opt. Lett.* 29, 778 (2004).

- N. M. Naumova, J. A. Nees, I. V. Sokolov, B. Hou, and G. A. Mourou, Relativistic generation of isolated attosecond pulses in a μm^3 focal volume, *Phys. Rev. Lett.* 92, 063902-1 (2004).
- S.-W. Bahk, V. Chvykov, G. Kalintchenko, A. Maksimchuk, G. A. Mourou, N. Saleh, and V. Yanovsky, Generation, Amplitude and Phase Characterization of 1021 W/cm² Intensity, *Ultrafast Optics IV*, Vol. 95, Springer Series in Optical Sciences, F. Krausz, G. Korn, P. Corkum, and I. A. Walmsley, eds. (Springer-Verlag, Berlin, 2004), p. 331.
- A P. Joglekar, Hsiao-hua Liu, Edgar Meyer, Gerard Mourou, and Alan J. Hunt, Optics at critical intensity: Applications to nanomorphing, *PNAS* 2004 101: 5856-5861
- T. Esirkepov, M. Borghesi, S.V. Bulanov, G. Mourou, T. Tajima,, Highly Efficient Relativistic Ion Generation in the laser Piston regime *Phys.Rev. Lett.* 92, 175003 (2004)
- Homoelle, D, D., Gaeta, A.L., Yanowsky, V., and Mourou, G. 2002 *Opt. Lett.* 27, 1646.
- Y. Sentoku, V. Y. Bychenkov, K. Flippo, A. Maksimchuk, K. Mima, G. Mourou, Z. M. Sheng, D. Umstadter, High-energy Ion Generation in Interaction of Short Laser Pulse with High-density Plasma,, *App. Phys. B*, 74 207 (2002).
- G. A. Mourou, D. Umstadter, Extreme Light, *Scientific American*, May 2002.
- T. Tajima, G. A. Mourou, "Zettawatt-Exawatt lasers and their applications in ultrastrong-field physics," *Phys. Rev. STAB* 5, 031301 (2002).
- G. Mourou, Z. Chang, A. Maksimchuk, J. Nees, S. V. Bulanov, V. Yu. Bychenkov, T. Zh. Esirkepov, N. M. Naumova, G. Pegoraro, and H. Ruhl, On the design of experiments for the study of relativistic nonlinear optics in the limit of single-cycle pulse duration and single-wavelength spot size, *Plasma Phys. Reports* 28 12 (2002).
- V. Yu. Bychenkov, Y. Sentoku, S. V. Bulanov, K. Mima, G. Mourou, and S. V. tolokonnikov, π Pion Production under the Action of Intense Ultrashort Laser Pulse on a Solid Target, *JETP Lett.* 74, 586 (2001).
- F. Druon, F. Balembois, P. Georges, A. Brun, S.-W., Bahk, J. Nees, G. Mourou, G. Cheriaux, J.-P. Chambaret, G. Aka, and D. Vivien, π 12-mJ, 350-fs Yb:GdCOB regenerative amplifier, *Opt. Commun.*, 199, 181 (2001).
- H. Liu, J. Nees, and G. Mourou, π Diode-pumped Kerr-lense mode-locked Yb:KY(WO₄)(2) laser, *Opt. Lett.*, 26, 1723 (2001).
- K. Nemoto, A. Maksimchuk, S. Banerjee, K. Flippo, G. Mourou, D. Umstadter, and V. Y. Bychenkov, π Laser-triggered ion acceleration and table-top isotope production, *Appl. Phys. Lett.*, 78, 595 (2001).

- G. Cheriaux, O. Albert, V. Wanman, J. P. Chambaret, C. Felix, and G. Mourou, "Temporal control of amplified femtosecond pulses with a deformable mirror in a stretcher," *Opt. Lett.*, 26, 169 (2001)
- Z. Sacks, G. Mourou, R. Danielius, "Adjusting pulse-front tilt and pulse duration by use of a single-shot autocorrelator," *Opt. Lett.*, 26, 462 (2001)
- O. Albert, H. Wang, D. Liu, Z. Chang and G. A. Mourou "Generation of relativistic intensity pulses at a Kilohertz repetition rate" *Opt. Lett.* 25, 1125(2000).
- O. Albert, G. Mourou, "Single optical cycle laser pulse in the visible and near-infrared spectral range," *Appl. Phys. B* 69, 207-209 (1999).
- K. Assagaman, W. W. Buck, S.-Y. Chen, R. Ent, R. N. Green, P. Gueye, C. Keppel, D. Umstadter, G. Mourou, R. Wagner, "Electron beam characteristics of a laser-driven plasma wakefield accelerator," *Nucl. Phys. A*, accepted for publication (1999).
- D. Umstadter, S.-Y. Chen, G. Ma, A. Maksimchuk, G. Mourou, M. Nantel, S. Pikuz, G. Sarkisov and R. Wagner, "Dense and Relativistic Plasmas Produced by Compact High-Intensity Lasers," *Astrophysics Journal Supplement*, accepted for publication (1999).
- G. S. Sarkisov, V. Yu. Bychenkov, V. N. Novikov, V. T. Tikhonchuk, A. Maksimchuk, S. -Y. Chen, R. Wagner, G. Mourou and D. Umstadter, "Self-focusing, channel formation and high-energy ion generation in interaction of an intense short laser pulse with a He jet," *Phys. Rev.E* 59 7042 (1999).
- J. Faure, Jiro Ittani, S. Biswal, G. Cheriaux, L.R. Bruner, Glen C. Templeton, Gerard Mourou, "A spatially dispersive regenerative amplifier for ultrabroadband pulses" *Optic Commun.* 159 (1999)68-73
- A.C. Tien, S. Backus, H. Kapteyn, M. Murnane, and G. Mourou, "Short Pulse Laser Damage in Transparent Materials as function of Pulse Duration", *Phys. Rev. Lett.* 82, 3883(1999).
- O. Albert, M.H. Meunier, G. Cheriaux, T. Norris, G. Mourou, and G. Vdovin, "Aberration correction in ultrafast scanning multiphoton confocal microscopy," *International Workshop on Adaptive Optics for Industry and Medicine*, Durham (UK), 1999.
- E. Zeek, K. Maginnis, S. Backus, U. Russek, M. Murnane, G. Mourou, H. Kapteyn, and G. Vdovin, "Pulse compression by use of deformable mirrors," *Opt. Lett.* 24, p. 493-5 (1999).
- P.A. VanRompay, Z. Zhang, C. Stewart, J.A. Nees, R. Clarke, G.A. Mourou, and P.P. Pronko, "Ultrafast pulsed-laser ablation, deposition, and diagnostic system," *Rev. Sci. Instr.* (in preparation).
- T. Juhasz, F. H. Loesel, R. M. Kurtz, C. Horvath, J. F. Bille, G. Mourou, "refractive surgery with femtosecond lasers," *IEEE Journal of Selected Topics in Quantum Electronic on Lasers in Medicine and Biology*, 1999..

- Z. Sacks, D. L. Craig, R. M. Kurtz, T. Juhasz, G. Mourou, μ °Spatially resolved transmission of highly focused beams through cornea and sclera between 1400 and 1800 nm μ ±, SPIE Proceedings 1999.
- Z. S. Sacks, F. Loesel, C. Durfee, R. M. Kurtz, T. Juhasz, G. Mourou, μ °Transscleral photodisruption for the treatment of glaucoma μ ±, SPIE Proceedings 1999.
- J. Queneuille, K. Nemoto, F. Druon, A. Maksimchuk, G. Ch μ °riaux and G. Mourou, μ °Second harmonic generation and wave front correction of a terawatt laser system, μ ± submitted for publication in Opt. Lett., 1999.
- S. Sarkisov, V. Yu. Bychenkov, V. N. Novikov, V. T. Tikhonchuk, A. Maksimchuk, S. Y. Chen, R. Wagner, G. Mourou and D. Umstadter, "Self-focusing, channel formation and high-energy ion generation in the interaction of an intense short laser pulse with a He jet," Phys. Rev. E 59 7042, 1999.
- J. Faure, J. Ittani, S. Biswal, G. Cheriaux, L.R. Bruner, G. C. Templeton, G. Mourou, μ °A spatially dispersive regenerative amplifier for ultrabroadband pulses" Optic Commun 159 (1999) 68-73.
- S. Biswal, J. Nees, and G. Mourou, μ °Ytterbium-doped-glass regenerative chirped pulse amplifier, μ ± Optics Communications, (160) 1-3, 1999, pp. 92-97.
- Braun, T. Sosnowski, S. Kane, P. van Rompay, T. Norris, and G. Mourou, "Tunable third-order phase compensation by refraction from an intra-grating-pair parallel plate," IEEE J. Sel. Topics Quant. Electron. 4, 426 (1998).
- F. Druon, G. Cheriaux, J. Faure, J. Nees, M. Nantel, A. Maksimchuk and G. Mourou, μ °Wave-Front correction of femtosecond terawatt lasers by deformable mirrors μ ±, Opt. Lett. vol. 23, pp. 1043-1045 (July 1998).
- G. Mourou μ °Ultrahigh-intensity lasers: nonlinear optics in the relativistic regime for future applications in time-resolved chemistry, μ ± J. of Chem. Edu. 75, pp. 565-570 (1998).
- M. Nantel, G. Ma, S. Gu, C.Y. Cote, J. Itatani, and D. Umstadter, μ °Pressure ionization and line-merging in strongly-coupled plasmas produced by 100-fs laser pulses," Phys. Rev. Lett. 80, 4442, 1998.
- Juhasz T, Loesel C, Horvath C, Kurtz R M, Mourou G, Corneal refractive surgery with femtosecond lasers, IEEE Journal of Quantum Electronics 1999, 5, 902-09.
- J. Itatani, J. Faure, M. Nantel, G. Mourou, S. Watanabe, μ °Suppression of the amplified spontaneous emission in chirped-pulse-amplification lasers by clean high-energy seed-pulse injection μ ±, Opt. Comm. 148, pp. 70-74 (1997).
- D. Umstadter, S.-Y. Chen, A. Maksimchuk, G. Mourou and R. Wagner, μ °Nonlinear Optics in Relativistic Plasmas and Laser Wakefield Acceleration of Electrons, μ ±Science 273, 472 (1996).

- A. Maksimchuk, M. Kim, J. Workman, G. Korn, J. Squier, D. Du, D. Umstadter, G. Mourou, and M. Bouvier, "Signal Averaging X-Ray Streak Camera with Picosecond Jitter," *Rev. Sci. Instrum.* 67, 697-699 (March 1996).
- D. Du, X. Liu, and G. Mourou, "Reduction of Multi-Photon Ionization in Dielectrics Due to Collisions," *Appl. Phys. B* 63, 617-621 (1996).
- S. P. Le Blanc, M. C. Downer, R. Wagner, S.-Y. Chen, A. Maksimchuk, G. Mourou, and D. Umstadter, "Temporal Characterization of a Self-Modulated Laser Wakefield," *Phys. Rev. Lett.* 77, 5381-5384 (Dec. 30, 1996).
- X. Liu, D. Du, and G. Mourou, "Laser Ablation and Micromachining with Ultrashort Laser Pulses," *IEEE J. Quantum Electron.* 33, 1706-1716 (October 1997).
- J. Nees, S. Biswal, F. Druon, J. Faure, M. Nantel and G. Mourou, "Ensuring Compactness, Reliability, and Scalability for the Next Generation of High-Field Lasers," *IEEE JSTQE* vol. 4, pp. 376-384.
- S. Biswal, J. Itatani, J. Nees and G. Mourou, "Efficient Energy Extraction Below the Saturation Fluence in a Low-Gain Low-Loss Regenerative Chirped-Pulse Amplifier," *IEEE JSTQE* vol. 4, pp. 421-425.
- M. Lenzner, J. Krüger, S. Sartania, Z. Cheng, Ch. Spielmann, G. Mourou, W. Kautek, and F. Krausz, "Femtosecond Optical Breakdown in Dielectrics," *Phys. Rev. Lett.* 80, May 1998
- G. Mourou, C. Barty, and M. Perry, "Ultrahigh-Intensity Lasers: Physics of the Extremes on a Tabletop," *Physics Today*, Jan. 1998
- A. Braun, X. Liu, G. Mourou, D. Kopf, and U. Keller, "Diode-pumped Nd:Glass kilohertz regenerative amplifier for subpicosecond microjoule level pulses," *Applied Optics* 36, 4163-4167 (20 June 97).
- G. S. Sarkisov, V. Yu. Bychenkov, V. T. Tikhonchuk, A. Maksimchuk, S. Y. Chen, R. Wagner, G. Mourou, and D. Umstadter, "Observation of the Plasma Channel Dynamics and Coulomb Explosion in the Interaction of a High-intensity Laser Pulse with a He Gas Jet," *JETP Lett.*, 66, 828-834 (25 Dec. 1997).
- X. Liu, and G. Mourou, "Ultrashort laser pulses tackle precision machining," reprinted from August 1997 edition of *Laser Focus World*.
- S. Backus, C. Durfee, G. Mourou, H. C. Kapteyn, M. M. Murnane, "0.2 Terawatt laser system at 1 kHz," *Opt. Lett.* 22, 1256 (1997).
- P. P. Pronko, P. A. Van Rompay, C. Horvath, X. Liu, T. Juhasz, and G. Mourou, "Avalanche ionization and dielectric breakdown in silicon with ultrafast laser pulses," *Phys. Rev. B.* 58, 2387-2390 (1998).

- M. Nantel, J. Itatani, A. C. Tien, J. Faure, K. Kaplan, M. Bouvier, T. Buma, P. Van Rompay, P. P. Pronko, D. Umstadter, and G. Mourou, "Temporal contrast in Ti:sapphire lasers: characterization and control," submitted to IEEE J. Quantum Electron. Vol.4, 449-458 (Nov. 1997).
- J.-C. Chanteloup, F. Druon, M. Nantel, A. Maksimchuk, and G. Mourou, "Single-shot wave-front measurements of high-intensity ultrashort laser pulses using a three-wave interferometer," submitted to Optics Letters, 1997.
- A.-C. Tien, M. Nantel, G. Mourou, D. Kaplan, and M. Bouvier, "High-dynamic-range laser-pulse-contrast measurement with a plasma-shuttered streak camera," Opt. Lett. 22, 1559, 1997.
- G. Mourou, "The ultrahigh peak power laser: present and future," Appl. Phys. B, 65, 2, 205-211, 1997.
- C. Horvath, A. Braun, H. Liu, X. Liu, T. Juhasz, and G. Mourou, "High power, direct diode-pumped Nd:glass laser," OSA Technical Digest Series II, 1997.
- C. Horvath, A. Braun, H. Liu, X. Liu, T. Juhasz, and G. Mourou, "Direct diode-pumped high-power femtosecond Nd:glass laser system," accepted for publication in Optics Letters.
- M. Wulff, F. Schotte, G. Naylor, D. Bourgeois, K. Moffat, G. Mourou, "Time-resolved structures of macromolecules at the ESRF: Single-pulse Laue diffraction, Stroboscopic data collection and femtosecond flash photolysis," Nuclear Instruments & Methods in Physics Research A, 398 (1997) 69-84.
- Z. Jiang, J. C. Kieffer, J. P. Matte, M. Chaker, O. Peyrusse, D. Gilles, G. Korn, A. Maksimchuk, S. Coe, and G. Mourou, "X-Ray Spectroscopy of Hot Solid-Density Plasmas Produced by Subpicosecond High-Contrast Laser Pulses at 10^{18} - 10^{19} W/cm²," Phys. Plasmas 2, 1702-1711 (May 1995)
- L.-M. Yang, T. Sosnowski, M. L. Stock, T. B. Norris, J. Squier, and G. Mourou, "Chirped-Pulse Amplification of Ultrashort Pulses with a Multimode Tm:ZBLAN Fiber Upconversion Amplifier," Opt. Lett. 20, 1044-1046 (1 May 1995).
- P. P. Pronko, S. K. Dutta, J. Squier, J. V. Rudd, D. Du, and G. Mourou, "Machining of Sub-Micron Holes using a Femtosecond Laser at 800 nm," Opt. Commun. 114, 106-110 (15 Jan 1995).
- A. Braun, G. Korn, X. Liu, D. Du, J. Squier, and G. Mourou, "Self-Channeling of High-Peak-Power Femtosecond Laser Pulses in Air," Opt. Lett. 20, 73-75 (January 1, 1995).
- L.-M. Yang, M. L. Stock, G. Mourou, A. Galvanauskas, M. E. Fermann, and D. J. Harter, "Chirped Pulse Amplification of Ultrashort Pulses Using Neodymium- and Erbium-Doped Fiber Amplifiers," in Ultrafast Phenomena IX, P. F. Barbara, W. H. Knox, G. A. Mourou, and A. H. Zewail, eds. (Springer-Verlag, New York, 1994) pp. 187-189.

- X. M. Zhao, J.-C. Diels, A. Braun, X. Liu, D. Du, G. Korn, G. Mourou, and J. M. Elizondo, "Use of Self-Trapped Filaments in Air to Trigger Lightning," in *Ultrafast Phenomena IX*, P. F. Barbara, W. H. Knox, G. A. Mourou, and A. H. Zewail, eds. (Springer-Verlag, New York, 1994) pp. 233-235.
- D. Du, X. Liu, G. Korn, J. Squier, and G. Mourou, "Optical Breakdown in Wide-Band-Gap Materials as a Function of Pulse Duration," in *Ultrafast Phenomena IX*, P. F. Barbara, W. H. Knox, G. A. Mourou, and A. H. Zewail, eds. (Springer-Verlag, New York, 1994) pp. 236-238.
- Z. Jiang, J. C. Kieffer, J. P. Matte, M. Chaker, G. Korn, C. Y. Chien, S. Coe, G. Mourou, and O. Peyrusse, "Laser-Solid Interaction at 10^{18} - 10^{19} W/cm²," in *Ultrafast Phenomena IX*, P. F. Barbara, W. H. Knox, G. A. Mourou, and A. H. Zewail, eds. (Springer-Verlag, New York, 1994) pp. 239-242.
- A. Braun, G. Korn, X. Liu, D. Du, J. Squier, and G. Mourou, "Self-Channeling of High-Peak-Power Femtosecond Laser Pulses in Air," in *Ultrafast Phenomena IX*, P. F. Barbara, W. H. Knox, G. A. Mourou, and A. H. Zewail, eds. (Springer-Verlag, New York, 1994) pp. 248-249.
- D. Du, J. Squier, R. Kurtz, V. Elnor, X. Liu, G. Goltmann, and G. Mourou, "Damage Threshold as a Function of Pulse Duration in Biological Tissue," in *Ultrafast Phenomena IX*, P. F. Barbara, W. H. Knox, G. A. Mourou, and A. H. Zewail, eds. (Springer-Verlag, New York, 1994) pp. 254-255.
- S. Kane, J. Squier, J. V. Rudd, A. C. Tien, G. Korn, and G. Mourou, "Hybrid Grating-Prism Stretcher-Compressor System with Cubic Phase and Wavelength Tunability, and Decreased Alignment Sensitivity," in *Ultrafast Phenomena IX*, P. F. Barbara, W. H. Knox, G. A. Mourou, and A. H. Zewail, eds. (Springer-Verlag, New York, 1994) pp. 275-277.
- J. P. Matte, J. C. Kieffer, M. Chaker, C. Y. Chien, Y. Beaudoin, C. Y. Chien, S. Coe, G. Mourou, M. Busquet, D. Gilles, O. Peyrusse, "Spectroscopic analysis of short-pulse laser-produced plasmas," *Laser and Particle Beams* 12, 455-462 (1994).
- F. A. Ilkov, A. Brodeur, V. Francois, S. L. Chin, J. Squier, S. Dutta, and G. Mourou, "Self-Action of Ultrashort Intense Laser Pulses in Dense Gases: Self-Focusing, Optical Breakdown, and Supercontinuum Generation," in *Proceedings of Annual Meeting of Laser and Electro-Optics Society (IEEE, Piscataway, NJ, 1994)*, Vol. 2, p. 97.
- S. Kane, J. Squier, J. V. Rudd, G. Mourou, "Hybrid Grating-Prism Stretcher-Compressor System with Cubic Phase and Wavelength Tunability and Decreased Alignment Sensitivity," *Optics Lett.* 19, 1876-1878 (November 15, 1994).
- M. D. Perry and G. Mourou, "Terawatt to Petawatt Subpicosecond Lasers," *Science* 264, 917-924 (May 13, 1994).
- H. H. Wang, J. F. Whitaker, J. H. Son, and G. A. Mourou, "Reply to 'Comments on 'Picosecond Pulse Propagation on Coplanar Striplines Fabricated on Lossy Semiconductor Substrates: Modeling and Experiments,'" *IEEE Trans. Microwave Theory Tech.* 42, 1723 (September 1994).

- J. F. Whitaker, H.-J. Cheng, D. Craig, and G. A. Mourou, "Optical Sampling for High Speed Electronics," Inst. Phys. Conf. Ser. No 135: Chapter 11 (Norfolk, England, 1994) pp. 393-402.
- J-H Son, J. Kim, and G. A. Mourou, "Photoconductive Step-Function Sampling," IEEE Microwave Guided Wave Lett. 4, 186-188 (June 1994).
- D. Du, X. Liu, G. Korn, J. Squier, and G. Mourou, "Laser-Induced Breakdown by Impact Ionization in SiO₂ with Pulse Widths from 7 ns to 150 fs," Appl. Phys. Lett. 64, 3071-3073, (June 6, 1994).
- M. L. Stock and G. Mourou, "Chirped Pulse Amplification in an Erbium-Doped Fiber Oscillator/Erbium-Doped Fiber Amplifier System," Opt. Commun. 106, 249-252 (1994).
- A. Braun, C. Y. Chien, S. Coe, and G. Mourou, "Long Range, High Resolution Laser Radar," Opt. Commun. 105, 63-66 (1994).
- S. Gupta, J. F. Whitaker, S. L. Williamson, G. A. Mourou, L. Lester, K. C. Hwang, P. Ho, J. Mazurowski, and J. M. Ballingall, "High-Speed Photodetector Applications of GaAs and In_xGa_{1-x}As/GaAs Grown by Low-Temperature Molecular-Beam-Epitaxy," J. Electron. Mat. 22, 1449-1455 (Dec. 1993).
- J. V. Rudd, G. Korn, S. Kane, G. Mourou, and P. Bado, "Chirped-Pulse Amplification of 55-fs Pulses at a 1-kHz Repetition Rate in a Ti:Al₂O₃ Regenerative Amplifier," Opt. Lett. 1, 2044-2046 (Dec. 1, 1993).
- J. Kim, J. Son, J. Nees, S. Wakana, S. Williamson, J. Whitaker, and G. Mourou, "120-GHz-Bandwidth Characterization of Microwave Passive Devices Using External Silicon-on-Sapphire Photoconductive Sampling Probe," in OSA Proceedings on Ultrafast Electronics and Optoelectronics, J. Shah and U. Mishra, eds. (Optical Society of America, Washington, DC, 1993), Vol. 14, pp. 224-227.
- J. Son, W. Sha, J. Kim, T. B. Norris, J. F. Whitaker, and G. A. Mourou, "Velocity Overshoot Dynamics in GaAs up to 200 kV/cm Observed by THz Radiation," in OSA Proceedings on Ultrafast Electronics and Optoelectronics, J. Shah and U. Mishra, eds. (Optical Society of America, Washington, DC, 1993), Vol. 14, pp. 134-137.
- M. Y. Frankel, D. Pavlidis, G. A. Mourou, "A Study and Optoelectronic Verification of AlGaAs/GaAs Heterojunction Bipolar Transistor Large-Signal Characteristics," IEEE J. Quantum Electron. 29, 2799-2804 (November 1993).
- C. Y. Chien, J. S. Coe, G. Mourou, J. C. Kieffer, M. Chaker, Y. Beaudoin, O. Peyrusse, and D. Gilles, "Production of a High-Density and High-Temperature Plasma with an Intense High-Contrast Subpicosecond Laser," Opt. Lett. 18, 1535-1537 (Sept. 1993).

- J.-H. Son, H.-H. Wang, J. F. Whitaker, and G. A. Mourou, "Picosecond Pulse Propagation on Coplanar Striplines Fabricated on Lossy Semiconductor Substrates: Modeling and Experiment," *IEEE Trans. Microwave Theory Tech.* 41, 1574-1580 (Sept. 1993).
- J. Squier, S. Coe, G. Mourou, D. Harter, and F. Salin, "Development of High Average Power Femtosecond Amplifiers Based on Ti:, Cr: and Nd:doped Materials," *Ultrafast Phenomena VIII*, 1992 J.-L. Martin, A. Migus, G. A. Mourou, and A. H. Zewail (Eds.) (Springer-Verlag, Berlin, 1993) Vol. 55, pp. 198-199.
- F. Salin, J. Squier, G. Mourou, and G. Vaillancourt, "Millijoule Femtosecond Pulse Amplification in Ti:Al₂O₃ at Multi-kHz Repetition Rates," *Ultrafast Phenomena VIII*, 1992 J.-L. Martin, A. Migus, G. A. Mourou, and A. H. Zewail (Eds.) (Springer-Verlag, Berlin, 1993) Vol. 55, pp. 203-205.
- G. Mourou, "Generation of Ultra-Intense Pulses and Applications," *Ultrafast Phenomena VIII*, 1992 J.-L. Martin, A. Migus, G. A. Mourou, and A. H. Zewail (Eds.) (Springer-Verlag, Berlin, 1993) Vol. 55, pp. 241-247.
- T. W. Johnston, Y. Beaudoin, M. Chaker, C. Y. Côté, J. C. Kieffer, J. P. Matte, H. Phipps, C. Y. Chien, S. Coe, G. Mourou, and D. Umstadter. "Plasma Physics with Ultra-Short and Ultra-Intense Laser Pulses," *Ultrafast Phenomena VIII*, 1992 J.-L. Martin, A. Migus, G. A. Mourou, and A. H. Zewail (Eds.) (Springer-Verlag, Berlin, 1993) Vol. 55, pp. 267-271.
- M. K. Jackson, M. Y. Frankel, J. F. Whitaker, G. A. Mourou, D. Hulin, A. Antonetti, M. Van Hove, W. De Raedt, P. Crozat, and H. Hafdallah, *Ultrafast Phenomena VIII*, 1992 J.-L. Martin, A. Migus, G. A. Mourou, and A. H. Zewail (Eds.) (Springer-Verlag, Berlin, 1993) Vol. 55, pp. 500-502.
- J. C. Kieffer, M. Chaker, C. Y. Côté, Y. Beaudoin, H. Phipps, C. Y. Chien, S. Coe, G. Mourou, "Time-Resolved Kiloelectron-Volt Spectroscopy of Ultrashort Plasmas," *Appl. Opt.* 32, 4247-4252 (Aug. 1, 1993).
- J. Son, W. Sha, J. Kim, T. B. Norris, J. F. Whitaker, and G. A. Mourou, "Transient Velocity Overshoot Dynamics in GaAs for Electric Fields < 200 kV/cm," *Appl. Phys. Lett.* 63, 923-925 (Aug. 93).
- J. Squier, G. Korn, G. Mourou, G. Vaillancourt, and M. Bouvier, "Amplification of Femtosecond Pulses at 10-kHz Repetition Rates in Ti:Al₂O₃," *Opt. Lett.* 18, 625-627, (April 15, 1993).
- C. Rouyer, P. Mazataud, I. Allais, A. Pierre, S. Seznec, C. Sauteret, G. Mourou, and A. Migus, "Generation of 50-TW Femtosecond Pulses in a Ti:sapphire/Nd:glass Chain," *Opt. Lett.* 18, 214-216 (February 1, 1993).
- J. Squier, G. Mourou, and D. Harter, "Alexandrite-Pumped Cr and Nd Materials for Chirped Pulse Amplification," in *OSA Proceedings on Advanced Solid-State Lasers*, 1992, L. L. Chase & A. Al. Pinto, eds. (Optical Society of America, Washington, DC, 1992) Vol. 13, pp. 87--90.

- F. Salin, J. Squier, G. Mourou, and G. Vaillancourt, "Millijoule Femtosecond Pulse Amplification in Ti:Al₂O₃ at Multi-kHz Repetition Rates," OSA Proceedings on Advanced Solid-State Lasers, L. L. Chase and A. Al. Pinto, eds. (Optical Society of America, Washington, DC, 1992), Vol. 13, pp. 78-81.
- D. J. Harter, J. Squier, and G. Mourou, "Alexandrite-Laser-Pumped Cr³⁺:LiSrAlF₆," Opt. Lett. 17, 1512-1514 (Nov. 1992).
- W. J. Schaff, S. D. Offsey, X. J. Song, L. F. Eastman, T. B. Norris, W. J. Sha, and G. A. Mourou, "Effect of Growth Conditions on Optical Response of GaAs Grown at Low Substrate Temperature by MBE," Materials Research Society Proceedings (Materials Research Society, 1992), Vol. 241, pp. 51-56.
- J. C. Kieffer, Y. Beaudoin, M. Chaker, C. Y. Chen, H. Phipps, C. Y. Chien, S. Coe, and G. Mourou, "Spectroscopic Diagnostics of Ionization Balance and Electron Density in Ultrashort Plasmas," Proceedings of the Third International Colloquium on X-Ray Lasers, Schliersee, Germany, Inst. Phys. Conf. Ser. (IOP Publishing Ltd., Bristol, England, 1992) No 125: Section 4, pp. 201-204.
- S. Gupta, J. F. Whitaker, and G. Mourou, "Ultrafast Carrier Dynamics in III-V Semiconductors Grown by Molecular-Beam Epitaxy at Very Low Substrate Temperatures," IEEE J. Quantum Electron. 28, 2464-2472 (October 1992).
- M. Y. Frankel, J. F. Whitaker, and G. A. Mourou, "Optoelectronic Transient Characterization of Ultrafast Devices," IEEE J. Quantum Electron. 28, 2313-2324 (October 1992).
- M. K. Jackson, M. Y. Frankel, J. F. Whitaker, G. A. Mourou, D. Hulin, A. Antonetti, M. Van Hove, W. De Raedt, P. Crozat, and H. Hafdallah, "Picosecond Large-Signal Switching Characteristics of a Pseudomorphic AlGaAs/InGaAs Modulated Doped Field Effect Transistor," Appl. Phys. Lett. 61, 1187-1189 (September 7, 1992)
- J. Squier, S. Coe, K. Clay, G. Mourou, and D. Harter, "An Alexandrite Pumped Nd:glass Regenerative Amplifier for Chirped Pulse Amplification," Opt. Commun. 92, 73-78 (August 15, 1992).
- J. Squier and G. Mourou, "Tunable Solid-State Lasers Create Ultrashort Pulses," Laser Focus World, 51-60 (June 1992).
- F. Salin, J. Squier, and G. Mourou, "Large Temporal Stretching of Ultrashort Pulses," Appl. Opt. 31, 1225-1228 (Mar 20, 1992).
- J. C. Kieffer, J. P. Matte, H. Phipps, M. Chaker, Y. Beaudoin, T. W. Johnston, C. Y. Chien, S. Coe, G. Mourou, and J. Dubau, "Electron Distribution Anisotropy in Laser-Produced Plasmas from X-Ray Line Polarization Measurements," Phys. Rev. Lett. 68, 480-483 (Jan 1992).
- J. Squier and G. Mourou, "Chirped Pulse Amplification of Femtosecond Pulses: from Microjoule to Multijoule," Laser Focus World, 15-18 (June 1992)

- Y. Beaudoin, C. Y. Chien, J. S. Coe, J. L. Tapia, and G. Mourou, "Ultra-High Contrast Ti:sapphire/Nd:glass Terawatt Laser System," *Opt. Lett.* 17, 865-867 (June 15, 1992).
- G. Mourou and D. Umstadter, "Development and Amplifications of Compact High-Intensity Lasers," *Phys. Fluids B*. 4, 2315-2325 (July 1992).
- M. Y. Frankel, J. F. Whitaker, G. A. Mourou, and J. A. Valdmanis, "Ultrahigh-Bandwidth Vector Network Analyzer Based on External Electro-Optic Sampling," *Solid State Electron.* 35, 325-332 (1992).
- J. C. Kieffer, J. P. Matte, H. Phipps, M. Chaker, Y. Beaudoin, T. W. Johnston, C. Y. Chien, S. Coe, G. Mourou, and J. Dubau, "Transport in Ultra-Dense Plasmas Produced by a 1-ps Laser Pulse," *Proceedings on Short-Wavelength Coherent Radiation*, ed. by P. H. Bucksbaum and N. M. Ceglio, (Optical Society of America, Washington, DC, 1991) Vol. II, pp. 266-270.
- M. Chaker, J.-C. Kieffer, J.-P. Matte, H. Phipps, P. Audebert, P. Maine, D. Strickland, P. Bado, and G. Mourou, "Interaction of a 1 psec Laser Pulse with Solid Matter," *Phys. Fluids B* 3, 167-175 (Jan. 1991).
- J. M. Chwalek, J. F. Whitaker, and G. A. Mourou, "Low-Temperature Epitaxially-Grown GaAs as a High-Speed Photoconductor for Terahertz Spectroscopy." *Proceedings on the Picosecond Electronics and Optoelectronics* (Optical Society of America, Washington, DC, 1991) Vol. 4, pp. 15-19.
- S. Gupta, M. Y. Frankel, J. A. Valdmanis, J. F. Whitaker, G. A. Mourou, F. W. Smith, and A. R. Calawa, "Subpicosecond Carrier Lifetime in GaAs Grown by Molecular Beam Epitaxy at Low Temperatures," *Appl. Phys. Lett.* 59, 3276-3278 (Dec. 1991).
- M. Pessot and G. Mourou, "Increased Power Handling Capacity of Single-Mode Fibers Through External Pulse Manipulation," accepted for publication by *Optics Letters*.
- F. Salin, J. Squier, and G. Mourou, "Multikilohertz Ti:Al₂O₃ Amplifier for High-Power Femtosecond Pulses," *Opt. Lett.* 16, 1964-1966 (December 1991).
- T. Motet, J. Nees, S. Williamson, and G. Mourou, "1.4 ps Rise-Time High-Voltage Photoconductive Switching," *Appl. Phys. Lett.*, 59, 1455-1457 (September 1991).
- F. Salin, C. Rouyer, J. Squier, S. Coe, and G. Mourou, "Amplification of 1 ps Pulses at 1.053 μ m in a Ti:Al₂O₃ Regenerative Amplifier," *Opt Commun.* 84, 67-70 (July 1991).
- S. Gupta, J. F. Whitaker, and G. A. Mourou, "Subpicosecond Pulse Propagation on Coplanar Waveguides: Experiment and Simulation," *IEEE Microwave and Guided Wave Lett.* 1, 161-163 (July 1991).
- M. Y. Frankel, S. Gupta, J. A. Valdmanis, and G. A. Mourou, "Terahertz Attenuation and Dispersion Characteristics of Coplanar Transmission Lines," *IEEE Trans. Microwave Theory Techniques*, 39, 910-916 (June 1991).

- S. Gupta, P. K. Bhattacharya, J. Pamulapati, and G. Mourou, "Optical Properties of High Quality InGaAs/InAlAs Multi-quantum Wells," *J. Appl. Phys.* 69, 4329-4336 (March 1991).
- J. Squier, F. Salin, G. Mourou, and D. Harter, "100-fs Pulse Generation and Amplification in Ti:Al₂O₃," *Opt. Lett.* 16, 324-326 (March 1991).
- C. Sauteret, D. Husson, G. Thiell, S. Seznec, S. Gary, A. Migus, and G. Mourou, "Generation of 20-TW Pulses of Picosecond Duration Using Chirped-Pulse Amplification in a Nd:Glass Power Chain", *Opt. Lett.* 16, 238-240 (February 1991).
- J. M. Chwalek, J. F. Whitaker, and G. A. Mourou, "Submillimetre Wave Response of Superconducting YBa₂Cu₃O_{7-x} Using Coherent Time-Domain Spectroscopy," *Electron. Lett.* 27, 447-448 (Feb. 1991).
- J. M. Chwalek, C. Uher, J. F. Whitaker, G. A. Mourou, and J. Agostinelli Subpicosecond Time-Resolved Studies of Coherent Phonon Oscillations in Thin-Film YBa₂Cu₃O_{6+x} (x < 0.4)," *Appl. Phys. Lett.* 58, 980-982 (Mar. 4, 1991).
- M. Y. Frankel, J. F. Whitaker, G. A. Mourou, and J. A. Valdmanis, "Experimental Characterization of External Electro-optic Probes," *IEEE Microwave and Guided Wave Lett.* 1, 60-62 (Mar. 1991).
- J.-L. Tappin and G. Mourou "Shaping of Clean, Femtosecond pulses at 1.053 μm for Chirped Pulse Amplification" *Opt. Lett.* 17, pp136-138.
- J. Squier, F. Salin, S. Coe, P. Bado, and G. Mourou, "Characteristics of an Actively Mode-Locked 2-Psec Ti: Sapphire Laser Operating in the 1-μm Wavelength Regime," *Opt. Lett.* 16, 85-87 (January 1991).
- D. J. Harter, M. Pessott, J. A. Squier, J. Nees, P. Bado, and G. A. Mourou, "Short Pulse Amplification in Tunable Solid State Materials," *Proceedings of the SPIE (International Society for Optical Engineering, Los Angeles, CA, 1990), Vol. 1229, pp. 19-28.*
- J. M. Chwalek, C. Uher, S. Gupta, J. F. Whitaker, G. A. Mourou, J. Agostinelli and M. Lelental, "Femtosecond Absorption Studies of Nonequilibrium Electronic Processes in High-T_c Superconductors," *Ultrafast Phenomena VII* ed. by C. B. Harris, E. P. Ippen, G. A. Mourou, and A. H. Zewail (Springer-Verlag Berlin 1990) pp. 351-353.
- S. Gupta, J. Pamalapati, J. Chwalek, P. K. Bhattacharya, and G. Mourou, "Subpicosecond Photoconductivity in III-V Compound Semiconductors Using Low Temperature MBE Growth Techniques," *Ultrafast Phenomena VII* ed. by C. B. Harris, E. P. Ippen, G. A. Mourou, and A. H. Zewail (Springer-Verlag, Berlin, 1990) p. 297-299.
- P. Bado, J. S. Coe, J. Squier, F. Salin, C.-Y. Chien, J.-L. Tappin, G. Mourou, "Ultrahigh Peak Power Generation: Present & Future," *Ultrafast Phenomena VII* ed. by C. B. Harris, E. P. Ippen, G. A. Mourou, and A. H. Zewail (Springer-Verlag, Berlin, 1990) Vol. 53, p. 92.

- T. B. Norris, G. A. Mourou, X. J. Song, L. F. Eastman, N. Vodjdani, B. Vinter, and C. Weisbuch, "Time-Resolved Photoluminescence Spectroscopy of GaAs Quantum Well Tunneling Structures," *Surf. Sci.* 228, 393-398, (1990).
- M. Y. Frankel, J. F. Whitaker, G. A. Mourou, F. W. Smith, and A. R. Calawa, "High-Voltage Picosecond Photoconductor Switch Based on Low-Temperature-Grown GaAs," *IEEE Trans. Electron. Devices.* 37, 2493-2498 (Dec. 1990).
- S. Gupta, P. K. Bhattacharya, J. Pamulapati, and G. Mourou, "Sub-Picosecond Photoresponse of Carriers in Low Temperature Molecular Beam Epitaxial In_{0.52}Al_{0.48}As/InP," *Appl. Phys. Lett.* 57, 1543-1545 (October 1990).
- J. M. Chwalek, C. Uher, J. F. Whitaker, G. A. Mourou, J. Agostinelli, and M. Lelental, "Femtosecond Optical Absorption Studies of Nonequilibrium Electronic Processes in High-Tc Superconductors," *Appl. Phys. Lett.* 57, 1696-1698 (Oct. 1990).
- C. Sauteret, G. Mainframe, and G. Mourou, "Laser Designers Eye Petawatt Power," *Laser Focus World*, October, 1990, 85-87.
- J. M. Chwalek, C. Uher, S. Gupta, J. F. Whitaker, G. A. Mourou, J. Agostinelli, and M. Lelental, "Femtosecond Optical Absorption Studies of Nonequilibrium Electronic Processes in High-Tc Superconductors," *Ultrafast Phenomena VII*, C. B. Harris, E. P. Ippen, G. A. Mourou, and A. H. Zewail, eds., (Springer-Verlag, Berlin, 1990) pp. 351-353.
- J. F. Whitaker, J. A. Valdmanis, M. Y. Frankel, S. Gupta, J. Chwalek, and G. A. Mourou, "External Electro-Optic Integrated Circuit Probing," *Microelectronic Engineering* 12, 369-379 (1990).
- G. Mourou, "Modulators and Q-Switches Serve Variety of Laser Applications," *Laser Focus World*, April 1990, 109-110.
- G. Vaillancourt, T. B. Norris, J. S. Coe, and G. A. Mourou, "Operation of a 1-kHz Pulse-Pumped Ti:Sapphire Regenerative Amplifier," *Opt. Lett.* 15, 317-319 (March 1990).
- M. Pessot, J. Squier, G. Mourou and D. Harter, "Amplification of 100-fs Pulses in Alexandrite Using Chirped Pulse Techniques," *Tunable Solid State Lasers*, Michael L. Shand and Hans P. Jenssen, eds. (Optical Society of America, Washington, D.C., 1989), pp. 44-49.
- J. F. Whitaker, T. B. Norris, G. A. Mourou, T. C. L. G. Sollner, W. D. Goodhue, X. J. Song, and L. F. Eastman, "Tunneling-Time Measurements of a Resonant Tunneling Diode," *Ultrafast Phenomena VI*, T. Yajima, K. Yoshihara, C. B. Harris, and S. Shionoya, eds., (Springer-Verlag, Berlin, 1989), pp. 185-188.
- J. M. Chwalek, D. R. Dykaar, R. Sobolewski, J. F. Whitaker, T. Y. Hsiang, S. Gupta, and G. A. Mourou, "Ultrafast Response of Superconducting Transmission Lines," *IEEE Trans. on Magnetics* 25, 814-817 (1989).

- J. Kieffer, J. Matte, S. B'illair, M. Chaker, P. Audebert, H. P'ipin, P. Maine, D. Strickland, P. Bado, and G. Mourou, "Absorption of an Ultrashort Laser Pulse in Very Steep Plasma Density," IEEE J. Quantum Electron. 25, 2640-2647 (December 1989).
- M. Y. Frankel, S. Gupta, J. A. Valdmanis, and G. A. Mourou, "Picosecond Pulse Formation By Transmission Line Discontinuities", Elect. Lett, 25, 1363-1365, (Sept. 1989).
- T. B. Norris, N. Vodjdani, B. Vinter, and C. Weisbuch, and G. A. Mourou, "Charge-Transfer-State Photoluminescence in Asymmetric Coupled Quantum Wells", Phys. Rev. Lett. 40, 1392-1395, (July 1989).
- J. F. Whitaker, J. A. Valdmanis, T. A. Jackson, K. B. Bhasin, R. Romanofsky, and G. A. Mourou, "External Electro-Optic Probing of Millimeter-Wave Integrated Circuits," 1989 IEEE MTT-S International Microwave Symposium Digest 1, 221-224 (June 1989).
- J. Nees, S. Williamson, and G. Mourou, "100 GHz Traveling-Wave Electro-Optic Phase Modulator," Appl. Phys. Lett. 54, 1962-1964 (May 1989).
- F. W. Smith, S. Gupta, H. Q. Lee, M. Frankel, V. Diadiuk, M. A. Hollis, D. R. Dykaar, G. A. Mourou, A. R. Calawa, "Picosecond GaAs-Based Photoconductive Optoelectronics Detectors," Appl. Phys. Lett. 54, 890-892, (March 1989).
- F. W. Smith, S. Gupta, H. A. Le, M. Frankel, V. Diadiuk, M. A. Hollis, D. R. Dykaar, G. A. Mourou, and A. R. Calawa, "Picosecond GaAs-Based Photoconductive Optoelectronic Detectors," Appl. Phys. Lett. 54, 890 (March 1989).
- J. C. Kieffer, P. Audebert, M. Chaker, J. P. Matte, H. P'ipin, T. W. Johnston, P. Maine, D. Meyerhofer, J. Delettrez, D. Strickland, P. Bado, and G. Mourou, "Short-Pulse Laser Absorption in Very Steep Plasma Density Gradients," Phys. Rev. Lett. 62, 760-763 (February 1989).
- M. Pessot, J. Squier, P. Bado, G. Mourou, and D. J. Harter, "Chirped Pulse Amplification of 300 fs Pulses in an Alexandrite Regenerative Amplifier," IEEE. J. Quantum Electron. 25, 61-66 (January 1989).
- T. B. Norris, X. J. Song, W. J. Schaff, L. F. Eastman, G. Wicks, and G. A. Mourou, "Tunneling Escape Time of Electrons from a Quantum Well Under the Influence of an Electric Field," Appl. Phys. Lett. 54, 60-62 (January 1989).
- K. Meyer, M. Pessot, G. Mourou, R. Grondin, and S. Chamoun, "Subpicosecond Photoconductivity Overshoot in Gallium Arsenide Observed by Electro-Optic Sampling," Appl. Phys. Lett. 53, 2254-2256 (December 1988).
- P. Maine, D. Strickland, P. Bado, M. Pessot, G. Mourou, [Generation of ultrahigh peak power pulses by chirped pulse amplification](#), IEEE Journal of Quantum electronics, 1988

- J. F. Whitaker, G. Mourou, T. C. L. G. Sollner, and W. D. Goodhue, "Picosecond Switching Time Measurement of a Resonant-Tunneling Diode," *Appl. Phys. Lett.* 53, 385-387 (August 1988).
- P. Maine and G. Mourou, "Amplification of 1-ns Pulses in Nd:Glass Followed by Compression to 1 psec," *Optics Lett* 13, 467-469 (June 1988).
- P. Bado, M. Pessot, J. Squier, G. A. Mourou, and D. J. Harter, "Regenerative Amplification in Alexandrite of Pulses from Specialized Oscillators," *IEEE J. Quantum Electron.* 24, 1167-1171, (June 1988).
- D. R. Dykaar, R. Sobolewski, J. M. Chwalek, J. F. Whitaker, T. Y. Hsiang, G. A. Mourou, D. K. Lathrop, S. E. Russek, and R. A. Buhman, "High-Frequency Characterization of Thin-Film Y-Ba-Cu Oxide Superconducting Transmission Lines," *Appl. Phys. Lett.* 52, 1444-1446 (April 1988).
- K. Nemoto, A. Maksimchuk, S. Banerjee, K. Flippo, G. Mourou, D. Umstadter, and V. Y. Bychenkov, "Laser-triggered ion acceleration and table-top isotope production," *Appl. Phys. Lett.*, 78, 595 (2001).
- P. Maine, D. Strickland, P. Bado, M. Pessot et G. Mourou, "En Route vers le Petawatt," *Revue Phys. Appl.* 221757(1987)
- H. E. Elsayed-Ali and G. A. Mourou, "Picosecond Reflection High-Energy Electron Diffraction," *Appl. Phys. Lett.*, 52, 103-104 (January 1988).
- J. F. Whitaker, R. Sobolewski, D. R. Dykaar, T. Y. Hsiang, and G. A. Mourou, "Propagation Model for Ultrafast Signals on Superconducting Dispersive Striplines," *IEEE Trans. Microwave Theory Tech.* MTT-36, 277-285 (1988).
- T. Y. Hsiang, J. F. Whitaker, R. Sobolewski, D. R. Dykaar, and G. A. Mourou, "Propagation Characteristics of Picosecond Electrical Transients on Coplanar Striplines," *Appl. Phys. Lett.* 51, 1551-1553 (1987).
- G. Mourou, K. Meyer, J. Whitaker, M. Pessot, and R. R. Grondin, and C. Caruso, "Ultrafast Optics Applied to Modern Device Research," *Picosecond Electronics and Optoelectronics II*, ed. F. J. Leonberger, C. H. Lee, F. Capasso, and H. Morkoc (Springer-Verlag, Berlin, Heidelberg, New York, London, Paris, Tokyo, 1987).
- G. Mourou, "Electron Device Probing in the Femtosecond Time Scale," *Picosecond Electronics and Optoelectronics II*, ed. F. J. Leonberger, C. H. Lee, F. Capasso, and H. Morkoc (Springer-Verlag, Berlin, Heidelberg, New York, London, Paris, Tokyo, 1987).
- G. Mourou, "High Speed Circuit Testing Using Ultrafast Optical Techniques," to be published in the proceedings of the First European Conference on Electron and Optical Beam Testing of Integrated Circuits, Grenoble, France (December 1987).

- J. F. Whitaker and G. A. Mourou, and K. A. Bhasin, "Millimeter-Wave MMIC Characterization by Noncontact Electro-Optic Sampling," to be published in the proceedings of the 12th International Conference on Infrared and Millimeter Waves, Florida (December 1987).
- D. R. Dykaar, R. Sobolewski, T. Y. Hsiang, and G. A. Mourou, "Response of a Josephson Junction to a Stepped Voltage Pulse," IEEE Trans. Magn. MAG-23, 767-770 (March 1987).
- T. Jackson, J. Nees, R. Vallee, and G. Mourou, "Novel Method for Ultrahigh-Frequency Electro-Optic Time-Domain Reflectometry," Elect. Lett. 23, 1130-1131 (1987).
- M. Pessot, P. Maine, G. Mourou, "1000 Times Expansion/Compression of Optical Pulses for Chirped Pulse Amplification," Opt. Commun. 62, 419-421 (June 1987).
- P. Bado, I. N. Duling III, T. Sizer II, T. B. Norris, G. A. Mourou, "Generation of White Light at 1 kHz," Ultrashort Pulse Spectroscopy and Applications (SPIE, Bellingham, WA, 1985), Vol. 533, pp. 59-62.
- H. E. Elsayed-Ali, T. B. Norris, M. A. Pessot, G. A. Mourou, "Time-Resolved Observation of Electron-Phonon Relaxation in Copper," Phys. Rev. Lett. 58, 1212-1215 (March 1987).
- J. F. Whitaker, T. B. Norris, G. Mourou, T. Y. Hsiang, "Pulse Dispersion and Shaping in Microstrip Lines," IEEE Trans. Microwave Theory Tech. MTT-35, 41-47 (January 1987).
- D. R. Dykaar, R. Sobolewski, J. F. Whitaker, T. Y. Hsiang, G. A. Mourou, M. A. Hollis, B. J. Clifton, K. B. Nichols, C.O. Bozler, and R. A. Murphy, "Picosecond Characterization of Ultrafast Phenomena: New Devices and New Techniques," Ultrafast Phenomena V, G. R. Fleming and A. E. Siegman, Eds. (Springer-Verlag, New York, 1986) p.103-106.
- J. M. Soures, R. L. McCrory, K. A. Cerqua, R. S. Craxton, R. Hutchison, S. D. Jacobs, T. Kessler, J. Kelly, G. Mourou, W. Seka, and D. Strickland, "High Power Laser Research and Development at the Laboratory for Laser Energetics," Laser Research and Development in the Northeast (1986) (SPIE, Bellingham, WA, 1987), Vol. 709, pp. 74-87.
- J. Nees and G.-Mourou, "Noncontact Electro-Optic Sampling with a GaAs Injection Laser," Electron. Lett. 22, 918-919 (August 1986).
- J. F. Whitaker and G. A. Mourou, "Optical Reconfiguration of Electrical Networks," Electron. Lett. 22, 899-900 (August 1986).
- G. Mourou, D. Strickland, and S. Williamson, "How Pulse-Compression Techniques can be Applied to High-Energy Laser Amplifiers," Laser Focus 22, 104-110 (June 1986).
- J. A. Valdmanis and G. Mourou, "Electro-Optic Sampling: Testing Picosecond Electronics, Part 2, Applications," Laser Focus, 96-106 (March 1986).

- J. A. Valdmanis and G. Mourou, "Electro-Optic Sampling: Testing Picosecond Electronics, Part 1, Principles and Embodiments," *Laser Focus*, 84-96 (February 1986).
- J. A. Valdmanis and G. Mourou, "Subpicosecond Electro-optic Sampling: Principles and Applications," *IEEE J. Quantum Electron.* QE-22, 69-78 (January 1986).
- S. Williamson, G.-Mourou, and J. C. M. Li, "Time-Resolved, Laser-Induced Phase Transformation in Aluminum," in *Energy Beam-Solid Interactions and Transient Thermal Processing 1984 Symposium 35* (Material Research Society, Pittsburgh, Pa, 1985), pp. 87-96.
- I. N. Duling III, T. Norris, T. Sizer II, P. Bado, and G. A. Mourou, "Kilohertz Synchronous Amplification of 85-Femtosecond Optical Pulses," *J. Opt. Soc. Am. B* 2, 616-618 (April 1985).
- D. R. Dykaar, T. Y. Hsiang, and G. A. Mourou, "An Application of Picosecond Electro-Optic Sampling to Superconducting Electronics," *IEEE Trans. Magn.* 21, 230-233 (March 1985).
- K. E. Meyer and G. A. Mourou, "Two-Dimensional E-Field Mapping with Subpicosecond Temporal Resolution," *Electron. Lett.* 21, 568-569 (June 1985).
- K. E. Meyer and G. A. Mourou, "Two Dimensional E-Field Mapping with Subpicosecond Resolution," in *Picosecond Electronics and Optoelectronics*, edited by G. A. Mourou, D. M. Bloom, and C. H. Lee (Springer-Verlag, New York, 1985), pp.-46-49.
- K. E. Meyer, D. R. Dykaar, and G. A. Mourou, "Characterization of TEGFETs and MESFETs Using the Electro-optic Sampling Technique," in *Picosecond Electronics and Optoelectronics*, edited by G. A. Mourou, D. M. Bloom, and C. H. Lee (Springer-Verlag, New York, 1985), pp. 54-57.
- S. Williamson and G. A. Mourou, "Picosecond Electro-Electron Optic Oscilloscope," in *Picosecond Electronics and Optoelectronics*, edited by G. A. Mourou, D. M. Bloom, and C. H. Lee (Springer-Verlag, New York, 1985), pp. 58-61.
- C.-J. Kryzak, K. E. Meyer, and G. A. Mourou, "Transmission Line Designs with a Measured Step Response of 3 ps Per Centimeter," in *Picosecond Electronics and Optoelectronics*, edited by G. A. Mourou, D. M. Bloom, and C. H. Lee (Springer-Verlag, New York, 1985), pp. 249-252.
- D. Strickland and G. Mourou, "Compression of Amplified Chirped Optical Pulses," *Opt. Commun.* 56, 219-221 (December 1985).
- T. Norris, T. Sizer II, and G. Mourou, "Generation of 85-fsec Pulses by Synchronous Pumping of a Colliding-Pulse Mode-Locked Dye Laser," *J. Opt. Soc. Am. B* 2, 613-614 (April 1985).

- G. Mourou, W. H. Knox, and S. Williamson, "High-Power Picosecond Switching in Bulk Semiconductors," *Picosecond Optoelectronic Devices* (Academic Press, 1984), pp. 219-248.
- S. Williamson, G. A. Mourou, and J. C. M. Li, "Time-Resolved Laser-Induced Phase Transformation in Aluminum," *Phys. Rev. Lett.* 52, 2364-2367 (June 1984).
- G. A. Mourou and K. E. Meyer, "Subpicosecond Electro-Optic Sampling Using Coplanar Strip Transmission Lines," *Appl. Phys. Lett.* 45, 492-494 (September 1984).
- W. Knox, G. Mourou, and T. M. Nordlund, "Applications of the Jitter-Free Signal Averaging Streak Camera in Solid State Physics, Biophysics, and Chemistry," *Appl. Phys. B* 28, 174-175 (1982).
- J. A. Valdmanis, G. A. Mourou, and C. W. Gabel, "Picosecond and Subpicosecond Optoelectronics Measurements of Future High Speed Electronic Devices," *Proceedings of the International Electron Devices Meeting* (IEEE, Philadelphia, 1983), pp. 597-600.
- J. A. Valdmanis, G. Mourou, and C. W. Gabel, "Electrical Transient Sampling System with Two Picosecond Resolution," *Picosecond Phenomena III*, eds. K. B. Eisenthal et al. (1982), pp. 101-102.
- J. A. Valdmanis, G. A. Mourou, and C. W. Gabel, "Subpicosecond Electrical Sampling," *IEEE J. Quantum Electron.* QE-19, 664-667 (April 1983).
- W. Knox, T. M. Nordlund, and G. Mourou, "Jitter-Free Streak Camera System," *Picosecond Phenomena III*, eds. K. B. Eisenthal et al. (1982), pp. 98-100.
- S. Williamson and G. Mourou, "Electron Diffraction in the Picosecond Domain," *Picosecond Phenomena III*, eds. K. B. Eisenthal et al. (1982), pp. 107-108; "Synchronous Amplification of 70 fsec Pulses Using a Frequency-Doubled Nd:YAG Pumping Source," J. D. Kafka, T. Sizer II, I. N. Duling, C. W. Gabel and G. Mourou, *Picosecond Phenomena III*, eds. K. B. Eisenthal et al. (1982), pp. 108-111.
- T. E. Orlowski, B. A. Weinstein, W. H. Knox, T. M. Nordlund, and G. Mourou, "Picosecond Radiative and Nonradiative Recombination in Amorphous As₂S₃," *Picosecond Phenomena III*, eds. K. B. Eisenthal et al. (1982), pp. 395-398.
- B. A. Weinstein, T. E. Orlowski, W. H. Knox, T. M. Nordlund, and G. Mourou, "Picosecond Luminescence and Competing Nonradiative Processes in As₂S₃ Glass," *Phys. Rev. B* 26, 4777-4780 (October 1982).
- J. A. Valdmanis, G. A. Mourou, and C. W. Gabel, "Subpicosecond Electrical Sampling," *IEEE J. Quantum Electron.* 19, 664-667 (April 1983).
- J. A. Valdmanis, G. Mourou, and C. W. Gabel, "Subpicosecond Electrical Sampling," *Picosecond Optoelectronics* (SPIE, Bellingham, WA, 1983), Vol. 439, pp. 142-148.

- T. Sizer II, J. D. Kafka, I. N. Duling III, C. W. Gabel, and G. A. Mourou, "Synchronous Amplification of Subpicosecond Pulses," *IEEE J. Quantum Electron.* QE-19, 506-511 (April 1983).
- S. Williamson, G. F. Albrecht, and G. Mourou, "Laser Triggered Cr:GaAs HV Sparkgap with High Trigger Sensitivity," *Rev. Sci. Instrum.* 53, 867-870 (June 1982).
- J. A. Valdmanis, G. Mourou, and C. W. Gabel, "Picosecond Electro-Optic Sampling System." *Appl. Phys. Lett.*, 41, 211-212 (August 1982).
- G. Mourou, W. Knox, and S. Williamson, "Advances in Picosecond Optoelectronics," (SPIE, Bellingham, WA, 1982), Vol. 322, pp. 107-114.
- G. Mourou and S. Williamson, "Picosecond Electron Diffraction," *Appl. Phys. Lett.* 41, 44-45 (July 1982).
- G. Mourou, W. Knox, and S.-Williamson, "Picosecond High-Power Switching and Applications," *Laser Focus*, 97-106 (April 1982).
- G.-Albrecht, A. Antonetti, and G. Mourou, "Temporal Shape Analysis of Nd³⁺: YAG Active/Passive Mode-Locked Pulses," *Opt. Commun.* 40, 59-62 (December 1981).
- G. A. Mourou and T. Sizer II, "Generation of Pulses Shorter than 70 fs with a Synchronously-Pumped CW Dye Laser," *Opt. Commun.* 41, 47-48 (March 1982).
- T. Sizer II, J. D. Kafka, A. Krisiloff, and G. Mourou, "Generation and Amplification of Sub-Picosecond Pulses Using a Frequency-Doubled Neodymium YAG Pumping Source," *Opt. Commun.* 39, 259-262 (October 1981).
- G. F. Albrecht and G. Mourou, "A Long-Pulse/Short-Pulse Synchronization Scheme Using a Regenerative Amplifier and High-Voltage Semiconductor Switching," *IEEE J. Quantum Electron.* QE-17, 1709-1712 (September 1981).
- J. Bunkenburg, J. Boles, D. C. Brown, J. Eastman, J. Hoose, R. Hopkins, L. Iwan, S. D. Jacobs, J. H. Kelly, S. Kumpan, S. Letzring, D. Lonobile, L. D. Lund, G. Mourou, S. Reformat, W. Seka, J. M. Soares, and K. Walsh, "The OMEGA High-Power Phosphate-Glass System: Design and Performance," *IEEE J. Quantum Electron.* QE-17, 1620-1628 (September 1981).
- G. Mourou, C.V. Stancampiano, A. Antonetti, and A. Orszag, "Picosecond Laser-Driven Semiconductor Switch," *Appl. Phys. Lett.* 39, 295 (1981).
- G. Mourou, C. V. Stancampiano, and D. Blumenthal, "Picosecond Microwave Pulse Generation," *Appl. Phys. Lett.* 38, 470-472 (March 1981).
- D. C. Brown, J. A. Abate, L. Lund, and J. Waldbillig, "Passively Switched Double-Pass Active Mirror System," *Appl. Opt.* 20, 1588-1594 (May 1981).

- T. Sizer II, G. Mourou, and R. R. Rice, "Picosecond Dye Laser Pulses Using a CW Frequency Doubled Nd:YAG as the Pumping Source," *Opt. Commun.* 37, 207-210 (May 1981).
- G. Mourou, C. V. Stancampiano, A. Antonetti, and A. Orszag, "Picosecond Microwave Pulses Generated with a Subpicosecond Laser-Driven Semiconductor Switch," *Appl. Phys. Lett.* 39, 295-296 (August 1981).
- W. Knox and G. Mourou, "A Simple Jitter-Free Picosecond Streak Camera," *Opt. Commun.* 37, 203-206 (May 1981).
- G. T. Harvey, C. W. Gabel, and G. Mourou, "Synchronization of a Mode-Locked Nd:YAG-Argon Ion Laser System," *Opt. Commun.* 36, 213-217 (February 1981).
- M. Stavola, G. Mourou, and W. Knox, "Picosecond Time Delay Fluorimetry Using a Jitter-Free Streak Camera," *Opt. Commun.* 34, 404-408 (September 1980).
- M. Stavola, M. G. Sceats, and G. Mourou, "Picosecond Switching of a Multi-Kilovolt DC Bias with Laser Activated Silicon at Low Temperature," *Opt. Commun.* 34, 409-412 (September 1980).
- G. Mourou, J. Bunkenburg, and W. Seka, "Electrooptic Prepulse Suppression for Fusion Laser Systems," *Opt. Commun.* 34, 252-254 (August 1980).
- G. Mourou and W. Knox, "A Picosecond Jitter Streak Camera," *Appl. Phys. Lett.* 36, 623-626 (April 1980).
- G. Mourou, W. Knox, and M. Stavola, "Optoelectronic Switching in the Picosecond Time Domain and Its Application," *Picosecond Phenomena II*, edited by R. Hochstrasser, W. Kaiser and C.V. Shank (Springer-Verlag-Berlin, Heidelberg, New York, 1980).
- W. Seka, J. Soures, O. Lewis, J. Bunkenburg, D. Brown, S. Jacobs, G. Mourou, and J. Zimmermann, "High-Power Phosphate-Glass Laser System: Design and Performance Characteristics," *Appl. Opt.* 19, 409-419 (February 1980).
- J. Agostinelli, G. Mourou, and C. W. Gabel, "Active Pulse Shaping in the Picosecond Domain," *Appl. Phys. Lett.* 35, 731-733 (November 1979).
- G. Mourou and W. Knox, "High-Power Switching with Picosecond Precision," *Appl. Phys. Lett.* 35, 492-495 (October 1979).
- A. Antonetti, M. M. Malley, G. Mourou, and A. Orszag, "High Power Switching with Picosecond Precision," *Opt. Commun.* 23, 453 (1977).
- A. Antonetti, A. Migus, M. M. Malley, and G. Mourou, "Optoelectronic Sampling in the Picosecond Range," *Opt. Commun.* 21, 221 (1977).

- C. H. Lee, A. Antonetti, and G. Mourou, "Measurements on the Photoconductive Lifetime of Carriers in GaAs by Opto-Electronic Gating Technique," *Opt. Commun.* 21, 158 (1977).
- G. Mourou and M. M. Malley, "Chronography in Molecular Physics in the Picosecond Time Scale," *Laser in Physical Chemistry and Biophysics* (Elsevier Scientific Publishing Company, 1975).
- G. Mourou and M. M. Malley, "Molecular Orientational Relaxation Times in Liquids," *Opt. Commun.* 13, 412 (1975).
- G. Mourou and M. M. Malley, "The Stokes-Shifted Fluorescence Risetime of Dye Molecules in Solution," *Chem. Phys. Lett.* 32, 476 (1975).
- G. Mourou, "Spectral Hole-Burning in Dye Solution," *IEEE J. Quantum Electron.* 11, 1 (1975).
- G. Mourou and M. M. Denariez-Roberge, "Saturation in Homogene des Colorants dans les Cas d'un Excitation Coherente," *Can. J. Phys.* 52, 2357 (1975).
- G. Mourou and M. M. Malley, "The Picosecond Kinetics of the Spontaneous Fluorescence of Erythrosin B," *Opt. Commun.* 11, 282 (1974).
- M. M. Malley and G. Mourou, "The Picosecond Time-Resolved Fluorescence Spectrum of Rhodamine 6G," *Opt. Commun.* 10, 323 (1974).
- G. Mourou and M. M. Denariez-Roberge, "Polarization of Fluorescence and Bleaching of Dyes in High Viscosity Solvent," *IEEE J. Quantum Electron.* 9, 787 (1973).
- G. Mourou, B. Drouin, et M. M. Denariez-Roberge, "Observation du 'Hole Burning' dans une Solution de Cryptocyanine dans le Methanol," *Opt. Commun.* 8, 56 (1973).
- G. Mourou, B. Drouin, M. Bergeron, and M. M. Denariez-Roberge, "Kinetics of Bleaching in Polymethine Cyanine Dyes," *IEEE J. Quantum Electron.* 9, 745 (1973).
- G. Mourou, B. Drouin, and M. M. Denariez-Roberge, "Variable Ultra Fast Photographic Shutter," *Appl. Phys. Lett.* 20, 453 (1972).
- G. Mourou et B. Drouin, "Realisation d'un Obturateur Ultra Rapide, Application a la Mesure Directe de la Duree des Impulsions d'un Laser a Rubis Modes Couples," *Opt. Commun.* 4, 48 (1971).
- G. Mourou, G. Busca, and M. M. Denariez-Roberge, "Influence of the Intensity of the Exciting Radiation on Decay Time and Polarization of the Fluorescence of Some Dyes in Solution," *Opt. Commun.* 4, 40 (1971).
- G. Mourou, "Etude de la Devive de Frequence dans les Lasers a Rubis Declenche," These de 3eme Cycle, University de Paris, 1970. (Ph.D. Thesis).

G. Mourou, "Lasers a Implusions Breves Appliques a l'Etude des Colorants en Solution," Doctorate D'Etat - Universite de Paris VII.

PATENTS HELD

Mourou Gerard, Valdmanis Janis A: Measurement of electrical signals with subpicosecond resolution. The University of Rochester Oct, 21 1986: US 4618819 (60 citation)

2. Valdmanis Janis A, Mourou Gerard: Measurement of electrical signals with picosecond resolution. The University of Rochester May, 1 1984: US 4446425 (53 citation)

3. Mourou Gerard, Meyer Kevin E: Measurement of electrical signals with subpicosecond resolution. University of Rochester Jul, 29 1986: US 4603293 (29 citation)

4. Williamson Steven, Mourou Gerard: Electro-electron optical oscilloscope system for time-resolving picosecond electrical waveforms. Univ Rochester Oct, 15 1986: EP0197196 (24 citation)

5. Mourou Gerard A, Knox Wayne H: Sweep drive circuit for a streak camera. University of Rochester Nov, 1 1983: US 4413178 (15 citation)

6. Mourou Gerard, Meyer Kevin E: Measurement of electrical signals with subpicosecond resolution. Univ Rochester Nov, 6 1985: EP0160209 (14 citation)

7. Mourou Gerard: Apparatus for switching high voltage pulses with picosecond accuracy. The University of Rochester Aug, 19 1980: US 4218618 (14 citation)

Switching of high voltage pulses (of the order of 10 kV) of durations from about 10.mu.s (microseconds) to 10ms (milliseconds) with picosecond accuracy is accomplished by a laser activated semiconductor switch made up of a body (18) of high resistivity semiconductor material, such as nearly...

8. Valdmanis Janis A, Mourou Gerard: Measurement of electrical signals with picosecond resolution. The University Of Rochester Aug, 18 1983: WO 1983/002829 (13 citation)

Electrical signals are measured (analyzed and displayed) with picosecond resolution by the electro-optic sampling of the signal being analyzed in a traveling wave Pockels cell (32). Sampling pulses, from an optical pulse generator (10) such as a colliding pulse mode-locked laser, of subpicosecond...

9. Mourou Gerard: Light activated solid state switch. University of Rochester Nov, 17 1981: US 4301362 (12 citation)

A semiconductor body, having deep lying charge carrier trapping centers, as by being doped with a deep-lying impurity to a concentration such that, at cryogenic temperature, the body is capable of holding off a multi-kilovolt DC bias without thermal instability and of switching the bias with...

10. Mourou Gerard: Methods and apparatus for generating microwave pulses and for the measurement and control thereof. The University of Rochester May, 11 1982: US 4329686 (9 citation)

Picosecond duration microwave pulses are generated used a laser activated semiconductor switch. High voltages are switched with picosecond rise time and result in the establishment of microwave pulses of frequency spectrum commensurate with the rise time of the voltage and wave guide parameters of...

11. Mourou Gerard, Williamson Steven L: Photoelectron switching in semiconductors in the picosecond time domain. The University of Rochester Feb, 14 1984: US 4431914 (7 citation)

12. Mourou Gerard: Light activated switching by the avalanche effect in semiconductors. The University of Rochester Aug, 31 1982: US 4347437 (7 citation)

13. Mourou Gerard, Norris Theodore B, Sizer II Theodore: Dye laser. University of Rochester Oct, 14 1986: US 4617665 (7 citation)

v 14. Mourou Gerard A, Squier Jeffrey, Coe John S, Harter Donald J: Amplification of ultrashort pulses with Nd:glass amplifiers pumped by alexandrite free running laser. University of Michigan Aug, 10 1993: US 5235606 (7 citation)

15. Albrecht Georg F, Mourou Gerard: Optical pulse correlation measurement. The University of Rochester Oct, 30 1984: US 4480192 (7 citation)

16. Pessot Maurice, Mourou Gerard A: Method for optical pulse transmission through optical fibers which increases the pulse power handling capacity of the fibers. The University of Rochester Apr, 17 1990: US 4918751 (6 citation)

A method for transmitting high energy subpicosecond pulses through single-mode optical fiber without stimulating nonlinear effects as are caused by self-phase modulation or Raman generation, which method increases the average power handling capacity of the fiber. The optical pulses, which may be...

17. Mourou Gerard: Laser system using organic dye amplifier. The University of Rochester Jan, 10 1984: US 4425652 (6 citation)

A laser system generates high energy ultra-short pulses using a dye cell amplifier driven by ultra-short pulses from a dye laser and pumped by pump pulses from a laser amplifier. The laser amplifier and dye laser are synchronously driven and pumped by the same laser such that the signal pulse from...

18. Nees John A, Mourou Gerard A, Jackson Todd A: Electro-optic measurement (network analysis) system. University of Rochester May, 17 1988: US 4745361 (5 citation)

A measurement system using electro-optic sampling and operative in the time domain characterizes devices over a bandwidth extending to upper microwave frequencies (e.g., 100 GHz). The device under test is mounted to or integrated on a substrate of electro-optic semiconductor material and is...

19. Mourou Gerard, Valdmanis Janis A, Williamson Steven L: Electron-optical wide band signal measurement system. The University of Rochester Feb, 28 1984: US 4434399 (5 citation)

Electrical signals are measured (analyzed and displayed) with picosecond resolution and sensitivity in the microvolt (less than 100 microvolts) range by electron-optically sampling the signal. Sampling electron bursts are produced in response to a train of subpicosecond optical pulses. A beam of...

20. Sprangle Phillip A, Ting Antonio, Esarey Eric H, Fisher Amnon, Mourou Gerard, Sudan Ravindra: Laser synchrotron source (LSS). US Navy Oct, 4 1994: US 5353291 (5 citation)

The laser synchrotron source (LSS) utilizes a high peak power or high average power laser to generate within a vacuum chamber a laser beam travelling in one direction to interact with an electron beam traveling in an opposite direction in order to generate high-power x-rays. A ring resonator formed...

21. Mourou Gerard, Sizer II Theodore: Dye laser medium for subpicosecond laser pulse generation. The University of Rochester May, 14 1985: US 4517675 (3 citation)

22. Mourou Gerard, Valdmanis Janis A, Williamson Steven L: Electron-optical wide band signal measurement system. The University Of Rochester Nov, 24 1983: WO 1983/004107 (2 citation)

23. Mourou Gerard A, Nees John A, Williamson Steven L: Ultrafast optical modulator. The University of Rochester May, 22 1990: US 4928076 (1 citation)

24. Williamson Steven L, Mourou Gerard A: Electro-electron oscilloscope. The University of Rochester Oct, 1 1991: US 5053696

25. Mourou Gerard, Boyer Gilbert: Method and device for machining a target using a femtosecond laser beam. Ecole Polytechnique Etablissem Jan, 4 2008: FR2903032

26. Nees John, Mourou Gerard, Jackson Todd: Electro-optic measurement (network analysis) system. Univ Rochester Dec, 20 1989: EP0346386

A measurement system using electro-optic sampling and operative in the time domain characterizes devices over a bandwidth extending to upper microwave frequencies (e.g., 100 GHz). The device under test is mounted to or integrated on a substrate of electro-optic semiconductor material and is...

27. MOUROU GERARD, CHERIAUX GILLES, RADIER CHRISTOPHE: DISPOSITIF DE GENERATION D'UNE IMPULSION LASER A DUREE REDUITE. / VORRICHTUNG ZUR ERZEUGUNG EINES LASERIMPULSES VON KURZER DAUER. / DEVICE FOR GENERATING A SHORT DURATION LASER PULSE. ECOLE POLYTECH Apr, 20 2011: EP2311158 A1

28. Mourou Gerard A, Du Detao, Dutta Subrata K, Elner Victor, Kurtz Ron, Lichter Paul R, Liu Xinbing, Pronko Peter P, Squier Jeffrey A: Method for controlling configuration of laser induced breakdown and ablation. / Procédé de contrôle des destructions et ablations par laser. The Regents Of The University Of Michigan Jun, 2 2009: CA 2186451

In one aspect the invention provides a method for laser induced breakdown of a material with a pulsed laser beam where the material is characterized by a relationship of fluence breakdown threshold (F_{th}) versus laser beam pulse width (T) that exhibits an abrupt, rapid, and distinct change or...

29. Mourou Gerard, Boyer Gilbert: Method and device for machining a target using a femtosecond laser beam. Ecole Polytech Apr, 1 2009: EP2040875

The invention relates to a method and device for machining a target using a femtosecond laser beam. The invention consists in taking advantage of the deterministic nature of the ablation threshold and the nonlinear dependence thereof through the use of amplitude or phase pupillary filtering using...

30. Mourou Gerard, Galvanauskas Almantas, Hulin Daniele: Optical pulse amplifier with high peak and high average power. Ecole Polytech Jun, 4 2008: EP1927168

31. Mourou Gerard A, Galvanauskas Almantas, Theobald Wolfgang, Nees John, Hou Bixue: Fiber laser-based euv-lithography. The Regents Of The University Of Michigan Nov, 11 2004: WO 2004/097520

32. Hunt Alan J, Mourou Gerard, Joglekar Ajit P, Meyhofer Edgar, Nees John A, Spooner Greg: Method for forming nanoscale features. The Regents Of The University Of Michigan Aug, 12 2004: WO 2004/068553

33. Mourou Gerard A, Du Detao, Dutta Subrata K, Elner Victor, Kurtz Ron, Lichter Paul, Liu Xinbing, Pronko Peter P, Squier Jeffrey A: Method for controlling laser-induced break and cut form. Regents Of The Univ Of Michigan Jul, 23 2002: JP 2002-205179

34. Mourou Gerard A, Du Detao, Dutta Subrata K, Elner Victor, Kurtz Ron, Lichter Paul, Liu Xinbing, Pronko Peter P, Squier Jeffrey A: Method for controlling configuration of laser induced breakdown and ablation. Univ Michigan Jan, 22 1997: EP0754103

35. Mourou Gerard A, Squier Jeffrey, Coe John Scott, Harter Donald J: Amplification of ultrashort pulses with nd:glass amplifiers pumped by alexandrite free running laser. University Of Michigan May, 13 1993: WO 1993/009580

36. Nees John, Mourou Gerard, Jackson Todd: Electro-optic measurement (network analysis) system. The University Of Rochester Sep, 7 1988: WO 1988/006737

A measurement system using electro-optic sampling and operative in the time domain characterizes devices over a bandwidth extending to upper microwave frequencies (e.g., 100 CHz). The device under test is mounted to or integrated on a substrate (10, 12) of electro-optical semiconductor material and...

37. Mourou Gerard, Valdmanis Janis A, Williamson Steven L: Electron-optical wide band signal measurement system. Univ Rochester May, 23 1984: EP0108806

38. Valdmanis Janis A, Mourou Gerard: Measurement of electrical signals with picosecond resolution. Univ Rochester Feb, 29 1984: EP0101493

39. Mourou Gerard: Apparatus for switching high voltage pulses with picosecond accuracy_ / Appareil de commutation d'impulsions haute tension avec une precision de l'ordre de la picoseconde. University Of Rochester Aug, 31 1982: CA 1130902

40. Flippo Kirk, Nemoto Koshichi, Maksimchuk Anatoly, Umstadter Donald, Mourou Gerard, Banerjee Sudeep, Bychenkov Valery, Gu Shaoting: Method and apparatus for high-energy generation and for inducing nuclear reactions. / Methode et appareil pour produire des particules de haute energie et amorcer des reactions nucleaires. The University Of Michigan : CA 2325362

The present invention is directed to methods for generation of high-energy particles. The invention is further directed to methods for causing nuclear transformations. Furthermore, the invention pertains to reaction devices capable for generation of such high-energy particles and initiation of...

41. J. Hunt, G. Mourou, A. P. Joglekar, E. Meyhofer, J. A. Nees and G. Spoon "Method for forming nanoscale features," US Patent #6,995,336, issued February 7, 2006.

42. Maksimchuk, K. Nemoto, K. Flippo, S. Gu, S. Banerjee, D. Umstadter, G. Mourou and V. Bychenkov, "Method and apparatus for high-energy ion generation and inducing nuclear reaction," US Patent #6,909,764 B2, issued June 21, 2005.

43. P. P. Pronko P. A. VanRompay, Z. Zhang and J. Nees "Method for Laser Induced Isotope Enrichment." US Patent # 6,586,696, issued July 1, 2003.

44. G. Mourou, A. Braun, F. C. Diels, M. Bouvier, X. M. Zhao, "Apparatus and method for enabling the creation of multiple extended conduction paths in the atmosphere," US Patent #5,726,855, issued March 10, 1998.

45. S. Biswal and G. A. Mourou, "Optical pumping method and apparatus," United States Patent #5,757,839, issued May 26, 1998.

46. D. Umstadter, J. Workman, A. Maksimchuk and X. Liu "Method and Apparatus for Generating Laser Plasma X-rays", US Patent #5,606,588, issued February 25, 1997.

47. G. Mourou, D. Du, S. Dutta, V. Elnor, R. Kurtz, P. R. Lichter, X. Liu, P. P. Pronko and J. Squier, "Method for controlling configuration of laser induced breakdown and ablation," United States Patent #5,656,186, issued August 12, 1997.

48. G. Mourou and J. Nees "Selectively Triggered High-Contrast Laser", US Patent #5,541,947, issued July 30, 1996.

1. Gérard Mourou, Gilles Cheriaux, Christophe Radier, Dispositif de Génération d'une Impulsion Laser à Durée Réduite, EP 2311158 A1

49. Mourou Gerard, Galvanauskas Almantas, Hulin Daniele: Optical pulse amplifier with high peak and high average power. 4 2008: EP1927168

50. G. Mourou, T. Tajima, K. Nakajima Free electron laser driven by fiber laser-based plasma accelerator EP23946

51. G. Mourou, T. Tajima, S. Gales « Arrangement for Generating a Proton Beam and an Installation for Transmutation of Nuclear Waste »

52. G. Mourou, T. Tajima, Dispositif heuristique mettant en oeuvre un équipement de production d'impulsions laser FR1352786.

53. Gérard Mourou, Toshi Tajima, Nathaniel J. Fisch, Vladimir M. Malkin, Zeev Toroker. "Method for the production of ultrashort and ultrahigh peak power laser pulses and system for putting into practice this method". N/SL/55468

54. G. Mourou, Sergey Mironov, Efim Khazanov, Alexander Sergeev, Systeme Laser Femtoseconde à grande énergie et impulsion de durée reduite FR1451101

55. Gérard Mourou, Toshiki Tajima et Remi Souldard, Laser Femtoseconde à Grande puissance Impulsionnelle 218267FR

56. Gérard Mourou, Gilles Cheriaux, Christophe Radier, Dispositif de Génération d'une Impulsion Laser à Durée Réduite, EP 2311158 A1

57. Gérard Mourou, Gilles Cheriaux, Christophe Radier, Device for generating a short duration laser pulse US 20110299152 A1