

CURRICULUM VITAE

Professor Douglas S. Hamilton

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EDUCATION

Ph.D. in Physics, University of Wisconsin-Madison, 1976.
B.A. in Physics, University of Colorado-Boulder, 1971.

EMPLOYMENT

2011-2013, Interim Head, Department of Physics, University of Connecticut
2009-2010, Interim Vice Provost, University of Connecticut
2006-2011, Associate Dean, College of Liberal Arts and Sciences, University of Connecticut
1979-present, Professor, Department of Physics, University of Connecticut
1977-1979, Research Associate, Physics and Electrical Engineering, University of Southern California

HONORS AND DISTINCTIONS

University of Connecticut Summer Fellow
Fellow, University of Connecticut Institute for Teaching and Learning
Chair, 1993 International Conference on Luminescence
Connecticut Academy of Arts and Sciences
Elected member of UConn Senate Executive Committee
Senate Liaison to UConn Board of Trustees

RESEARCH INTERESTS

Laser Physics, Quantum Electronics, Optical Properties of Ions in Solids, Non-linear Optics, and Solid State Physics.

TEACHING SPECIALTIES

Physics for the Non-Scientist, Laser and Optical Physics, Physics for the Health Sciences, Laboratory Physics.

JOURNAL PUBLICATIONS

“Utilization of Synchrotron Radiation for the Measurement of Fast Fluorescence Lifetimes of Ions in Solids” W.S. Heaps, D.S. Hamilton and W.M. Yen, *Optics Comm.* **9**, 304 (1973).

“Time Resolved Fluorescence Line Narrowing Studies on Pr^{3+} in LaF_3 ” R. Flach, D.S. Hamilton, P.M. Selzer and W.M. Yen, *Phys. Rev. Lett.* **35**, 1034 (1975).

“Phonon Assisted Energy Migration in $\text{Pr}^{3+}:\text{LaF}_3$ ” P.M. Selzer, D.S. Hamilton, R. Flach and W.M. Yen, *J. Lumin.* **12/13**, 737 (1976).

“Anomalous Linewidth Behavior in Eu^{3+} Doped Silicate Glass” P.M. Selzer, D.L. Huber, D.S. Hamilton, W.M. Yen and M.J. Weber, *Phys. Rev. Lett.* **36**, 813 (1976).

“Fluorescence Linewidths and Energy Transfer in $\text{LaF}_3(\text{Pr}^{3+}, \text{Nd}^{3+})$ ” D.S. Hamilton, P.M. Selzer, D.L. Huber and W.M. Yen, *Phys. Rev.* **B 14**, 2183 (1976).

“Laser Induced Fluorescence Line-Narrowing Studies of Impurity Ion Systems; $\text{LaF}_3:\text{Pr}^{3+}$ ” R. Flach, D.S. Hamilton, P.M. Selzer and W.M. Yen, *Phys. Rev.* **B 15**, 1248 (1977).

“Nonradiative Spectral and Spatial Energy Transfer in Ruby” P.M. Selzer, D.S. Hamilton and W.M. Yen, *Phys. Rev. Lett.* **38**, 858 (1977).

“Spectral Energy Transfer in PrF_3 and PrCl_3 ” D.S. Hamilton, P.M. Selzer and W.M. Yen, *Phys. Rev.* **B 16**, 1858 (1977).

“Time-dependent Effects in Fluorescent Line Narrowing” D.L. Huber, D.S. Hamilton and B. Barnett, *Phys. Rev.* **B 16**, 4642 (1977).

“Brillouin Scattering and Phonon Damping in Optical Glasses” D. Heiman, D.S. Hamilton and R.W. Hellwarth, *Phys. Rev.* **B 19**, 6583 (1979).

“Spatial Diffusion Measurements in Impurity Doped Solids by Degenerate Four-Wave Mixing” D.S. Hamilton, D. Heiman, J. Feinberg and R.W. Hellwarth, *Opt. Lett.* **4**, 124 (1979).

“Raman Scattering and Nonlinear Refractive Index Measurements of Optical Glasses” D. Heiman, R.W. Hellwarth and D.S. Hamilton, *J. Non-Cryst. Solids.* **34**, 63 (1979).

“Two-Photon Excitation of the Lowest 4f-5d Near Ultraviolet Transition in $\text{Ce}^{3+}:\text{CaF}_2$ ” S.K. Gayen and D.S. Hamilton, *Phys. Rev.* **B 28**, 3706 (1983).

“Temporal Analysis of Short Laser Pulses using Degenerate Four-Wave Mixing” J. Jansky, G. Corradi and D.S. Hamilton, *Appl. Opt.* **23**, 8 (1984).

“Laser Induced Defect Centers in $\text{Ce}^{3+}:\text{CaF}_2$ ” G.J. Pogatshnik, S.K. Gayen and D.S. Hamilton, *J. Lumin.* **31/32**, 251 (1984).

“Two-photon Excitations of Higher 5d States in $\text{Ce}^{3+}:\text{CaF}_2$ ” S.K. Gayen, G.J. Pogatshnik and D.S. Hamilton, *J. Lumin.* **31/32**, 260 (1984).

“Optical Absorption of Chromium-Doped Paratellurite” I. Foldvari, R. Voszka, L.A. Kappers, D.S. Hamilton and R.H. Bartram, *Phys. Lett.* **109A**, 303 (1985).

“Analysis of the Lowest 4f-5d Two-photon Transition in $\text{Ce}^{3+}:\text{CaF}_2$ ” S.K. Gayen, D.S. Hamilton and R.H. Bartram, *Phys. Rev.* **B 34**, 7517 (1986).

“Excited State Photoionization of Ce^{3+} ions in $\text{Ce}^{3+}:\text{CaF}_2$ ” G.J. Pogatshnik and D.S. Hamilton, *Phys. Rev.* **B 36**, 8251 (1987).

- “Rate Equation Description of Multi-photon Creation of Color Centers and Simultaneous One-photon Annihilation” G.J. Pogatshnik and D.S. Hamilton, *J. Lumin.*, **38**, 201 (1987).
- “UV-Induced Loss Mechanisms in a $\text{Ce}^{3+}:\text{LiYF}_4$ Laser” Ki-Soo Lim and D.S. Hamilton, *J. Lumin.* **40&41**, 319 (1988).
- “Optical Absorption and Photoionization Measurements from the Excited States of $\text{Ce}^{3+}:\text{Y}_3\text{Al}_5\text{O}_{12}$ ” D.S. Hamilton, S.K. Gayen, G.J. Pogatshnik, R.D. Ghen and W.J. Miniscalco, *Phys. Rev.* **B 39**, 8807 (1989).
- “Optical Gain and Loss Studies in $\text{Ce}^{3+}:\text{YLiF}_4$ ” Ki-Soo Lim and D.S. Hamilton, *J. Opt. Soc. Am.* **B 6**, 1401 (1989).
- “The Luminescence of Molybdenum in ZnWO_4 Single Crystals” L.A. Kappers, I. Foldvari, O.R. Gilliam, D.S. Hamilton, Li-Ji Lyu, I. Cravero and F. Schmidt, *J. Phys. Chem. Solids*, **51**, 953 (1990).
- “Radiative and Nonradiative Relaxation Measurements in Ce^{3+} Doped Crystals” Li-Ji Lyu and D.S. Hamilton, *J. Lumin.*, **48/49**, 251 (1991).
- “Pressure Dependence and Thermal Quenching of Chromium Photoluminescence in $\text{Cs}_2\text{NaYCl}_6:\text{Cr}^{3+}$ ” A.G. Rinzler, J.F. Dolan, L.A. Kappers, D.S. Hamilton and R.H. Bartram, *J. Phys. Chem. Solids*, **54**, 89 (1993).
- “Coherent Optical Transients in Rare Earth Doped Fibers: Enhancement of Accumulated Grating Signals by the Maximum Entropy Method” A.J. Lucero and D.S. Hamilton, *J. Lumin.*, **60/61**, 753 (1994).
- “Electron Traps and Transfer Efficiency of Cerium-doped Aluminate Scintillators” R.H. Bartram, D.S. Hamilton, L.A. Kappers and A. Lempicki, *J. Lumin.*, **75**, 183 (1997).
- “Energy Transfer from Gr^{3+} to Cr^{3+} in Cr Doped $\text{Gd}_3\text{Sc}_2\text{Ga}_3\text{O}_{12}$ ” S.K. Vargas and D.S. Hamilton, *J. Lumin.*, **72/74**, 904 (1997).
- “Electron Traps and Transfer Efficiency of Cerium-doped Lutetium Oxyorthosilicate Scintillators” R.H. Bartram, D.S. Hamilton, L.A. Kappers, and A. Lempicki, J. Glodo, J.S. Schweitzer and C.L. Melcher, *Radiation Effects & Defects in Solids*, **150**, 11 (1999).
- “Two-photon excitation spectroscopy of $\text{Cr}^{3+}:\text{K}_2\text{NaScF}_6$ elpasolite: I. Experimental aspects” G.R. Wein, D.S. Hamilton, U. Sliwczuk, A. Rinzler and R.H. Bartram, *J. Phys.: Condens. Matter*, **13**, 2363 (2001).
- “Two-photon excitation spectroscopy of $\text{Cr}^{3+}:\text{K}_2\text{NaScF}_6$ elpasolite: II. Theoretical models” R.H. Bartram, G.R. Wein and D.S. Hamilton, *J. Phys.: Condens. Matter*, **13**, 2377 (2001).
- “Two-photon excitation spectra of $\text{Cr}^{3+}:\text{K}_2\text{NaScF}_6$ ” R.H. Bartram, G.R. Wein, D.S. Hamilton, U. Sliwczuk, and A.G. Rinzler, *Radiation Effects & Defects in Solids*, **154**, 205 (2002).
- “Thermal quenching and electron traps in LSO” L.A. Kappers, R.H. Bartram, D.S. Hamilton, A. Lempicki and J. Glodo, *J. Lumin.*, **102-103**, 162 (2003).

“Infrared to visible up-conversion in thulium and holmium doped lutetium aluminum garnet” Ki-Soo Lim, P. Babu, Sun-Kyun Lee, Van-Thai Pham and D.S. Hamilton, *J. Lumin.*, **102-103**, 737 (2003).

“Hole traps in Lu₂O₃:Eu ceramic scintillators. II. Radioluminescence and thermoluminescence” R.H. Bartram, A. Lempicki, L.A. Kappers and D.S. Hamilton, *J. Lumin.*, **106**, 169 (2004).

“Afterglow, low-temperature radioluminescence and thermoluminescence of Lu₂O₃:Eu ceramic scintillators” L.A. Kappers, R.H. Bartram, D.S. Hamilton, C. Brecher and A. Lempicki, *Nucl. Instrum. Methods A* , **537**, 443 (2005).

“Nonvolatile two-color holographic recording in Tm-doped near-stoichiometric LiNbO₃” Van-Thai Pham, Sun-Kyun Lee, Minh-Tuan Trinh, Ki-Soo Lim, D.S. Hamilton and K. Polgar, *Opt. Comm.* **248**, 89 (2005).

“Suppression of afterglow in CsI:Tl by codoping with Eu²⁺ - II: Theoretical model” R.H. Bartram, L.A. Kappers, D.S. Hamilton, A. Lempicki, C. Brecher, J. Glodo, V. Gaysinskiy, and E.E. Ovechkina, *Nucl. Instrum. Methods A*, **558**, 458 (2006).

“Light-Induced Absorption and Holographic Recording in Pr:LiNbO₃” Van-Thai Pham, Sun-Kyun Lee, Minh-Tuan Trinh and Ki-Soo Lim and D.S. Hamilton, *Jour. Korean Phys. Soc.*, **49**, 533 (2006).

“Femtosecond laser-induced reduction in Eu-doped sodium borate glasses” Ki-Soo Lim, Sunkyun Lee, Trinh-Minh Tuan, Jung-Rim Nam, Myeongkyu Lee, D.S. Hamilton, and G. N. Gibson, *J. Lumin.*, **122-123**, 14 (2007).

“Effect of Eu²⁺ concentration on afterglow suppression in CsI:Tl,Eu” L.A. Kappers, R.H. Bartram, D.S. Hamilton, C. Brecher, A. Lempicki, V. Gaysinskiy, E.E. Ovechkina and V.V. Nagarkar, *Radiation Measurements*, **42**, 537 (2007).

“Multilayer optical memory using femtosecond-laser induced fluorescence in rare-earth ion doped glass” Ki-Soo Lim, Jongho Shin, Kyungsik Jang, Sunkyun Lee and Douglas S. Hamilton, *Appl Phys A*, **93**, 215 (2008).

“A Tunneling Model for Afterglow Suppression in CsI:Tl,Sm Scintillation Materials” L.A. Kappers, R.H. Bartram, D.S. Hamilton, A. Lempicki, C. Brecher, V. Gaysinskiy, E.E. Ovechkina, S. Thacker and V.V. Nagarkar, *Radiation Measurements*, **45**, 426 (2010).

“Concentration Dependence of Afterglow Suppression in CsI:Tl,Sm” L.A. Kappers, R.H. Bartram, D.S. Hamilton, A. Lempicki, C. Brecher, V. Gaysinskiy, E.E. Ovechkina and V.V. Nagarkar, *J. Phys.: Conf. Ser.* **249** 012014 (2010).

“Scintillation, Afterglow and Thermoluminescence of CsI:Tl,Sm” L.A. Kappers, R.H. Bartram, D.S. Hamilton, A. Lempicki, C. Brecher, V. Gaysinskiy, E.E. Ovechkina and V.V. Nagarkar, *IOP Conf. Ser.: Mater. Sci. Eng.* **15** 012091 (2010).

“Multiple thermoluminescence glow peaks and afterglow suppression in CsI:Tl co-doped with Eu^{2+} or Yb^{2+} ” R.H. Bartram, L.A. Kappers, D.S. Hamilton, A. Lempicki, C. Brecher, E.E. Ovechkina, S.R. Miller and V.V. Nagarkar, *IOP Conf. Ser.: Mater. Sci. Eng.* **80** 012003 (2015).

Ph.D. STUDENTS

Swapan K. Gayen, 1984, “Two-Photon Absorption Spectroscopy in $\text{Ce}^{3+}:\text{CaF}_2$ ”

Gerald J. Pogatshnik, 1986, “UV Laser Induced Photochromic Centers in $\text{Ce}^{3+}:\text{CaF}_2$ ”

Ki-Soo Lim, 1987, “UV-Induced Color Centers and Gain Measurements in $\text{Ce}^{3+}:\text{LiYF}_4$ ”

Li-Ji Lyu, 1990, “Radiative and Nonradiative Relaxation Processes in Ce^{3+} Doped Crystals and Glasses”

G. Robert Wein, 1992, “Two Photon Excitation Spectroscopy of $\text{Cr}^{3+}:\text{K}_2\text{NaScF}_6$ ”

Alan Lucero, 1993, “Optical Coherent Transients in Rare-Earth Doped Fibers”

David M. Perry, 1996, “Energy Transfer from Tm^{3+} to Tm^{3+} and from Tm^{3+} to Ce^{3+} in $\text{Tm}^{3+}:\text{Ce}^{3+}:\text{Y}_3\text{Al}_5\text{O}_{12}$ ”

Stacey Kefalos Vargas, 1999, “Energy Transfer from Gd^{3+} to Cr^{3+} in Cr-doped $\text{Gd}_3\text{Sc}_2\text{Ga}_3\text{O}_{12}$ ”

BOOKS

Proceedings of the 1993 International Conference on Luminescence, eds. D.S. Hamilton, R.M. Meltzer and M.D. Sturge, North Holland.

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