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Date of Birth and place: October 22, 1976 in Wichita, Kansas, USA

Citizenship: US Citizen

Education:

- Graduate:** Ph. D. physics, July 2005, Freien Universität-Berlin, Germany
Diplom (Masters) physics, Dec. 2000, Freien Universität-Berlin, Germany
- Undergraduate:** B.S. physics, May 1999, University of Texas in Austin, Texas, USA
- High School:** Diploma, May 1995, Plano East Senior High School in Plano, Texas

Research Experience:

January 2005- current : Post-doctoral position at the Max Born Institute - Berlin

Supervisor: Dr. Arkadi Rosenfeld

Topics: Material structuring of transparent media

November 2000- December 2004 : Ph. D. Student at the Max Born Institute - Berlin

Supervisors: Prof. I.V.Hertel and Dr. C.P.Schulz

Topics: Rydberg Series of C_{60} , Internal Energy Redistribution of C_{60} (Ionization and Fragmentation), Pulse Shaping (control of fragmentation of C_{60}), Implementation of position sensitive detector (Roentdek) for electron and ion detection

Doctoral Thesis: *Energy Absorption and Redistribution Dynamics in isolated C_{60} Molecules*

August 1999 – November 2000 : Diploma student at the Max Born Institute - Berlin

Supervisors: Prof. I.V. Hertel and Dr. Georg Korn

Topics: Implementation of liquid crystal modulator (CRI) for Pulse Shaping of a Femtosecond Pulses and applications

Diploma Thesis: *Femtosecond Pulse Shaping*

March 1997-May 1999 : Undergraduate Research Assistant- University of Texas - Austin

Supervisor: Prof. Manfred Fink

Project: Absolute flux of molecular beams and absolute measurement of radiation pressure force of laser beams

May 1998- August 1998 : Summer internship sponsored by NSF - University of Colorado/JILA

Supervisor: Dr. Steven Cundiff

Project: Soliton Propagation through an Optical Fiber

Skills:

Languages: English (native), German (advanced – spoken and written), and Spanish (basic – spoken and written)

Computer Programming: C/C++, LabView, html, Turbo Pascal

Research Strengths: gas-phase spectroscopy, vacuum apparatuses, molecular beams, photo- electron/ion spectroscopy, time-resolved laser spectroscopy, femtosecond pulse shaping, optimization algorithms, position sensitive detection of ions and electrons, phase contrast microscopy

Patent: Nr. DE 101 25 206, *Procedure for direct microstructuring of materials*

In this patent, we have developed a novel technique for material processing using temporally shaped femtosecond laser pulses. The temporal form of the laser pulses is adapted to the material, producing a cleaner, deeper hole.

Publications:

- 1.) **M. Boyle**, K. Hoffmann, C.P. Schulz, I.V. Hertel, E.E.B. Campbell, R.D. Levine, *Excitation of Rydberg Series in C₆₀*, Phys. Rev. Lett. 87, (2001) 273401.
- 2.) **M. Boyle**, K. Hoffmann, C.P. Schulz, I.V. Hertel, and E.E.B. Campbell, *First Experimental observation of Rydberg series in C₆₀*, in ***Femtochemistry and Femtobiology*** (2002) 126-32.
- 3.) R. Stoian, **M. Boyle**, A. Thoss, A. Rosenfeld, G. Korn, E.E.B. Campbell, and I.V. Hertel, *Laser ablation of dielectrics with temporally shaped femtosecond pulses*, Appl. Phys. Lett. 80 (2002) 353-5.
- 4.) R. Stoian, **M. Boyle**, A. Thoss, A. Rosenfeld, G. Korn, and I.V. Hertel, *Dynamic temporal pulse shaping in advanced ultrafast laser material processing*, Appl. Phys. A 77 (2003) 265-9.
- 5.) **M. Boyle**, M. Hedén, C.P. Schulz, E.E.B. Campbell, and I.V. Hertel, *Two Color Pump-Probe Study and Internal Energy Dependence of Rydberg State Excitation in C₆₀*, Phys. Rev. A, 70 (2004) 051201.
- 6.) A. Lassesson, K. Hansen, M. Jönsson, A. Gromov, E. E. B. Campbell, **M. Boyle**, D. Pop, C.P. Schulz, I. V. Hertel, Taninaka, H. Shinohara, *A Femtosecond Laser Study of the Endohedral Fullerenes Li@C₆₀ and La@C₈₂*, Euro. Phys. J. D 34 (2005) 205.
- 7.) **M. Boyle**, T. Laarmann, I. Shchatsinin, C. P. Schulz, and I. V. Hertel, *Fragmentation dynamics of fullerenes in intense fs-laser fields: Loss of small neutral fragments on a picosecond time scale*, J. Chem. Phys. 122 (2005) 181103.

- 8.) **M. Boyle**, T. Laarmann, K. Hoffmann, M. Hedén, C. P. Schulz, E. E. B. Campbell, and I. V. Hertel, *Excitation dynamics of Rydberg states in C₆₀: The role of internal energy stored in vibrational modes*, Euro. Phys. J. D submitted.

Oral Presentations:

- 1.) **M. Boyle**, *Femtosecond Laser Spectroscopy of C₆₀*, 2nd European Cluster Cooling Network Workshop, Nieuwegein, The Netherlands, August 2001.
- 2.) **M. Boyle**, *Rydberg Series of C₆₀*, Deutsche Physikalische Gesellschaft Frühjahrs Tagung, Osnabrück, Germany, March 2002
- 3.) **M. Boyle**, *Electronic to Vibrational Coupling Dynamics and Energy Equilibration of C₆₀*, 3rd European Cluster Cooling Network Workshop, Strasbourg, France, August 2002
- 4.) **M. Boyle**, *Energy Redistribution in C₆₀*, Deutsche Physikalische Gemeinschaft Frühjahrs Tagung, Hannover, Germany, March 2003
- 5.) **M. Boyle**, *Fragmentation Dynamics of C₆₀*, Deutsche Physikalische Gemeinschaft Frühjahrs Tagung, Munich, Germany, March 2004
- 6.) **M. Boyle**, *Two color time-resolved pump-probe spectroscopy of C₆₀*, European Cluster Cooling Network, Isle of Bute, Scotland, June 2004, INVITED

Posters:

- 1.) **M. Boyle**, A. Thoss, N. Zhavaronkov, G. Korn, T. Oksenhendler, D. Kaplan, *Amplitude and phase shaping in a high average power 1kHz CPA-Laser* CLEO 2001, Baltimore, MD, USA.
- 2.) **M. Boyle**, K. Hoffmann, C.P. Schulz, I.V. Hertel, E.E.B. Campbell, *Excitation of Rydberg Series in C₆₀*, Femtochemistry Conference, Toledo, Spain, Sept. 2001
- 3.) **M. Boyle**, C.P. Schulz, I.V. Hertel, M. Hedén, E.E.B. Campbell, *Ultrafast Ionization and Fragmentation Dynamics of C₆₀*, ISSPIC11, Strasbourg, France August 2002
- 4.) **M. Boyle**, K. Hoffmann, C.P. Schulz, I.V. Hertel, E.E.B. Campbell, *Excitation of Rydberg Series in C₆₀*, ISSPIC11, Strasbourg, France August 2002
- 5.) **M. Boyle**, K. Hoffmann, C.P. Schulz, I.V. Hertel, M. Hedén, E.E.B. Campbell, *Internal energy dependence of Rydberg Series Excitation in C₆₀*, 4th European Cluster Cooling Network Workshop, Igls, Austria, April 2003

References:

1.) Professor Ingolf V. Hertel – thesis supervisor

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2.) Professor Eleanor E. B. Campbell – collaborator

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3.) Professor Manfred Fink – undergraduate supervisor

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4.) Dr. C. P. Schulz - immediate supervisor

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