

CURRICULUM VITAE

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PERSONAL:

Date of Birth: April 11, 1972, Troy MI USA

Residence: 1760 Northside Dr. Apt 119, Atlanta, GA 30318

RESEARCH EXPERIENCE:

September 2005—Present

Research Scientist II, Georgia Institute of Technology

June 2003-August 2005

Postdoctoral Fellow, Georgia Institute of Technology

Laboratory of Prof. Thom Orlando

Project: Electronic Processes on Ice Surfaces

EDUCATION:

Ph.D. in Physical Chemistry, May 2003

University of Georgia-Athens, Athens GA

Advisor: Prof. Michael A. Duncan

Dissertation Title: Photo dissociation Studies of Gas Phase Metal Ion-Molecule Complexes.

Pulsed supersonic molecular beam, laser vaporization metal cluster source, Wiley-McLaren Reflectron-TOF Mass Spectrometry, UV-VIS and infrared laser resonance photodissociation spectroscopy, REMPI, ZEKE-PFI.

Additional coursework in physics department including advanced quantum mechanics, molecular spectroscopy theory, and advanced electrodynamics.

B.Sc. major: ACS Accredited Professional Chemistry, June 1996

Eastern Michigan University, Ypsilanti MI

NSF-REU recipient. Advisor: Dr. Maria Milletti. Research involved semi-empirical and *ab initio* (Gaussian) electronic structure calculations on binuclear hydrogen bridged ruthenium and iron complexes. Grant included calculation time on a Cray Y-MP at the National Center for Supercomputer Applications.

Undergraduate research on diplatinum organometallic complexes using semi-empirical HF-SCF calculation package.

Served on Lab Prep Crew four consecutive years.

Senior Prep Crew member after 2 years. Responsibilities included training new crew members, writing procedure manuals for hazardous materials handling, titration and standardization techniques.

Additional advanced course work in physics and mathematics, including quantum mechanics, electrodynamics, analog electronics and mathematical physics.

SPECIAL SKILLS:

Expertise operating, maintaining and servicing a wide range of high power pulsed laser systems including Nd:YAG (Spectra Physics: PRO Series, DCR3-11, GCR11-170, INDI30, Continuum: Precision Power Lite 9010, 8010 (injection seeded), Precision Power Lite 7020, Surelite I-20, Mini Lite), Excimers (Lambda Physik: Compex 102 ArF, Compex 110-100 HzKrF, Lumonics: PM-842 ArF), Tunable Dye systems (Spectra Physics PDLII+WEX, Continuum DL500, Lumonics Hyperdye, Lambda Physik Scan Mate 2e intracavity etalon, OPO (Spectra Physics MOPO sl, Laser Vision Infrared KTP/KTA).

Laboratory equipment experience with high vacuum and ultra high vacuum (UHV) systems, Quadrupole and Time of Flight Mass Spectrometry, Pulsed Molecular Beams, Laser Vaporization.

Designed and constructed various analog and digital circuits including high-speed, high-voltage (5-30kV) pulse switches, small signal amplifiers, PC serial and parallel port hardware interfaces, circuitry and firmware engineering for digital interface microcontrollers.

Extensive programming skills for data acquisition and instrument control with MS Visual Basic 6, Labview. Developed complete set of data acquisition applications for mass spectrometry and mass selected laser spectroscopy. Device interfacing and control via RS-232, GPIB (IEEE 488.2), Programmable Digital I/O and custom hardware interfaces. Devices

include Tektronix 540 A, LeCroy 9410, 9310, Wave Runner Digital Oscilloscopes, SRS Digital Delay Generators (DG535), SRS Multichannel Scaler Averager (SR 420), SRS Gated Photon Counter (SR 400), and custom interfaces for all above listed tunable lasers. Wrote an Object Oriented scan program that interfaces each laser in the lab simultaneously.

Administration of systems and networks running MS Windows 9x, NT, 2000, XP pro, Red Hat Linux 6.2-8.0, Mandrake Linux 7.0-8.0.

Proficient with LATEX2e authoring and document handling.

Experience with design and construction of mechanical components including parts for use under ultrahigh vacuum.

PUBLICATIONS:

1. "The Importance of Pores in the Electron Stimulated Production of H₂ and O₂ in Low Temperature Ice," G.A. Grieves and T.M. Orlando, *Surf. Sci.* 593, 180 (2005).
2. "The Chemical Nature of Europa Surface Material and the Relation to a Sub-Surface Ocean," T.M. Orlando, T.B. McCord and G.A. Grieves, *Icarus*, 177, 528 (2005).
3. "Low-Energy (5-250 eV) Electron Stimulated Desorption of H₂⁺ and H⁺(H₂O)_n from Low-Temperature Water Ice Surfaces," J. Herring-Captain, G.A. Grieves, A. Alexandrov, M.T. Sieger, H.-Y. Chen and T.M. Orlando, *Phys. Rev. B* 72, 035431 (2005).
4. "Production of Oxygen by Electronically-Induced Dissociations in Ice," R.E. Johnson, P.D. Cooper, T. Quickenden, G.A. Grieves and T.M. Orlando, *J. Phys. Chem. A* *in press*.
5. "Growth Dynamics and Intracluster Reactions in Ni⁺(CO₂)_n Complexed via Infrared Spectroscopy," N.R. Walker, R.S. Walters, G.A. Grieves and M.A. Duncan, *J. Chem. Phys.* 121, 21 (2004).
6. "Generation of 'Unstable' Doubly Charged Metal Cation Complexes in a Laser Vaporization Cluster Source," N.R. Walker, G.A. Grieves, J.B. Jaeger, R.S. Walters and M.A. Duncan, *Intl. J. Mass Spectrom.* 228(2-3), 285 (2003).
7. "The Metal Coordination in Ni⁺(CO₂)_n Complexes," and NiO⁺(CO₂)_n N.R. Walker, G.A. Grieves, R.S. Walters and M.A. Duncan, *Chem. Phys. Lett.* 380, 230 (2003).
8. "Photodissociation of exohedral transition metal-C₆₀ complexes," G.A. Grieves, J.W. Buchanan, J.E. Reddic and M.A. Duncan, *Intl. J. Mass Spectrom.* 204, 223 (2001).

9. "Growth and Photodissociation Crx-(Coronene)y Complexes," N.R. Foster, G.A. Grieves, J.W. Buchanan, N.D. Flynn and M.A. Duncan, *J. Phys. Chem. A* 104, 11055 (2000).
10. "Photodissociation of Silver-Coronene Cluster Cations," J.W. Buchanan, G.A. Grieves, N.D. Flynn and M.A. Duncan, *Intl. J. Mass Spectrom.* 185-187, 617 (1999).
11. "Novel Mixed-Ligand Sandwich Complexes: Competitive Binding of Iron with Benzene, Coronene and C60," J.W. Buchanan, G.A. Grieves, J.E. Reddic and M.A. Duncan, *Intl. J. Mass Spectrom.* 182, 323 (1999).
12. "Metal and Multi-Metal Complexes with Polyaromatic Hydrocarbons: Formation and Photodissociation of Fex-(Coronene)y Cations," J.W. Buchanan, J.E. Reddic, G.A. Grieves and M.A. Duncan, *J. Phys. Chem.* 102, 6390 (1998).

PRESENTATIONS:

"Electronic Desorption from 'Surfaces' within Pores of Low Temperature Ice," Contributed Talk, DIET 10 Symposium, Shizuoka, Japan, November 2004.

"The Oxygen Atmosphere of Jupiter's Icy Moons," G.A. Grieves and T.M. Orlando, Invited Talk, Local Chapter ACS, Spring Hill College, Mobile, AL
"Non-Thermal Processes on Low Temperature Ice Surfaces and the Relevance to Planetary Atmospheres," G.A. Grieves, T.M. Orlando, J. Herring and A. Aleksandrov, Invited Talk, Symposium on Condensed Molecular Surfaces, RIKEN Institute for Chemical and Physical Sciences, Wako, Saitama, Japan December 2003.

"Surface Processes On The Icy Moons Of Jupiter From Interplanetary Radiation Bombardment," G.A. Grieves, T.M. Orlando and M.T. Seiger, South East Regional Meeting of the ACS, Georgia State University, Atlanta, GA November 2003.

"Gas Phase Infrared Photodissociation Spectroscopy of Nickel Carbon Dioxide Clusters: Solvation and Solvent Induced Chemistry," G.A. Grieves, N.R. Walker, R.S. Walters and M.A. Duncan, Invited Talk, Georgia Institute of Technology, Atlanta, GA March 2003.

"Transition Metal Ion Complexes With Aromatic and Polyaromatic Molecules: Gas Phase Photodissociation and Infrared Spectroscopy," G.A. Grieves, N.R. Foster, J.W. Buchanan, J.E. Reddic, D. van Heijnsbergen, G. von Helden, G. Meijer and M.A. Duncan, Invited Talk, NASA Ames Laboratory, San Jose, CA, December 2002.

"Gas Phase Infrared Photodissociation Spectroscopy of Nickel Carbon Dioxide Clusters: Solvation and Solvent Induced Chemistry," G.A. Grieves, N.R. Walker, R.S. Walters and M.A. Duncan, Physical Chemistry Seminar, University of Georgia, Athens, December 2002.

"Infrared Photodissociation Spectroscopy of Magnesium and Iron Ion+Water clusters," G.A. Grieves, G. Gregoire, N.R. Walker, R.S. Walters and M.A. Duncan, Contributed Talk, International Symposium on Molecular Spectroscopy, Ohio State University, June 2002

"Measuring Superfluidity in Liquid ^4He Nanodroplets," G.A. Grieves, Physical Chemistry Seminar, University of Georgia, Athens, November 2001.

"Novel Structures of Gas Phase Metal Polyaromatic Hydrocarbon Clusters," G.A. Grieves, N.R. Foster, M. Nee, J.W. Buchanan and M.A. Duncan, Chemical Sciences Research Retreat, University of Georgia, Athens, September 2001.

"Titanium Carbide Nanocrystals In Space," G.A. Grieves, D. van Heijnsbergen, G. von Helden, A.J. A. van Roij, G. Meijer, A.G.G.M. Tielens, S.Hony, L.B.F.M. Waters and M.A. Duncan, Chemical Sciences Research Retreat, University of Georgia, Athens, September 2000.

"ZEKE-PFI Spectroscopy of the Al-(H₂O) and Al-(D₂O) Complexes," J.K. Agreiter, A.M. Knight, G.A. Grieves and M.A. Duncan, Contributed Talk, International Symposium on Molecular Spectroscopy, Ohio State University, June 2000.

"Production and Photodissociation of Exohedral Metal-C₆₀ Complexes in the Gas Phase," G.A. Grieves, J.W. Buchanan, N.D. Flynn, N. McKee and M.A. Duncan, Symposium on Nanostructured Materials, Georgia Institute of Technology, Atlanta, November 1999.

"Photodissociation Studies of Novel Metal-C₆₀ and Metal-Coronene Clusters," G.A. Grieves and M.A. Duncan, Physical Chemistry Seminar, University of Georgia, Athens, September 1999. G.A. Grieves and M.C. Milletti, Northeast Regional ACS Meeting, Cincinnati Ohio, March 1994.

"Visible Absorption Spectra of Binuclear Pt(III) Complexes," W. D. Michael, G.A. Grieves and M.C. Milletti, Northeast Regional ACS Meeting, Cincinnati Ohio, March 1993.

PROFESSIONAL MEMBERSHIPS:

American Chemical Society (ACS) 2005-present

American Geophysical Union (AGU) 2003-present

American Physical Society (APS) 2003-present

Materials Research Society (MRS) 2003-present

Astronomical League (AL) 2005-present

The Planetary Society 2005-present

AWARDS:

EMU Chemistry Award for Creativity in Research as Undergrad 3 consecutive years.

2000 Procter and Gamble Poster Award for poster entitled "Metal Carbide Nanocrystals in Space."

State of Michigan Governors Award for participation in EMU's first NSF-REU grant.

Sandra J. Lobbetael Scholarship in Chemistry.

State of Michigan Undergraduate Scholarship.

PERSONAL INTERESTS:

hiking, camping, mountain biking, Shao Lin Kung Fu (3rd degree brown belt), amateur astronomy, amateur mineralogy.

REFERENCES: Available on request.