Jeffrey H. Macedone VITA

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Education

Ph.D. – Analytical Chemistry	Brigham Young University	2004
B.S. – Chemistry	Brigham Young University	1999
A.A. – General Studies	Rick's College	1996

Experience

Associate Professor	Brigham Young University	9/2013-present
Assistant Professor	Brigham Young University	1/2007-9/2013
Post Doc (P.B. Farnsworth)	Brigham Young University	2004-2006
Instructor, Chemistry 107	Brigham Young University	9/2000-4/2002

Courses Taught

Chemistry 101 – Introductory General Chemistry
Chemistry 105 – General College Chemistry I
Chemistry 106 – General College Chemistry II
Chemistry 107 – General College Chemistry Laboratory
Chemistry 223 – Quantitative and Qualitative Analysis
Chemistry 227 – Principles of Chemical Analysis

Awards

University Accessibility Center Faculty Award	**2014**
Phi Eta Sigma Faculty Recognition Award (Student Honor Society)	**2013**
BYU College Faculty (3-10 yr) Recognition Award - Outstanding Teaching	**2013**
Spectrochimica Acta Part B: Atomic Spectroscopy Award (Multiple Authors)	**2006**
Society for Applied Spectroscopy Student Poster Award at FACSS	**2003**
Garth L. Lee Graduate Student Teaching Award	**1998**

Professional Societies

American Chemical Society 2/2002-present

Service

American Chemical Society Central Utah Section

Secretary (assist with events, write newsletters, manage rosters & minutes) 2007 - 2017
Treasurer (handle reimbursements, file sections taxes, financial docs.) 2008 - present

American Chemical Society – Developed Y-Chem Training Program 2011

With the assistance of an undergraduate student, I developed a training program to prepare members of a Y-Chem to present Chemistry "Magic Shows" to excite elementary school children about math and science. The basic program was already in existence, but no formal training or certification process was in place. We developed a program comprised of demonstrations that were visually impressive but as simple and safe as possible to prepare, present, and transport.

Consulting Work

Qualtrics Media Elements and Visual Effects **2018**
Consulted on chemical demonstrations developed, performed to be recorded as media elements for X4 conference.

Pearson "Pause and Predict" video project **2013**
I participated in writing the scripts and acted as a presenter for seven "pause and predict" videos for Pearson. These videos will be part of their online homework system to guide students when they incorrectly answer a question. The intention of these online videos was to show students the chemistry in action, and have them predict the outcome before showing the answers.

Pulse oximetry for Owlet **2013**
I provided several students with a LabView program and hardware prototype for calculating pulse rate and oxygen levels in the blood through the skin using LED lights. The final product these students generated is actively marketed by the Owlet Baby Monitor company.

Textbook Editorial Consultant for W.W. Norton (Gilbert Text) **2011-2012**
As an editorial consultant with Norton Publishing, I reviewed a 22-chapter textbook which used a revised approach to chemistry that starts by focusing on the nature of matter at the atomic level. My work here was to review, comment, and examine associated artwork as well as problem sets. Several phone conferences were held with all editorial consultants to handle differing views and concerns. Through this project, I was able to gain insights and experience in the collaborative process of authoring and publishing texts.

Creative Works

Learning Objects from Step-wise Animations **2016-2017**
W. W. Norton contacted me and asked me to further develop my step-wise animations project. The step-wise animation project (described below) was an instructor resource, and this new work required a student focused approach. The step-wise animations have been re-written as video leaning objects, and will be used as a form of feedback within the SmartWork online homework program.

Electrochemistry Analogy Demonstration **2014-2016**
A colleague and I built a mechanical device that functions as a balance and uses mass as an analogy for electrical potential. This device is intended to aid in teaching the abstract concept of electrochemistry. The device is available for faculty to use, and we also made a tutorial video which faculty can link students to: https://youtu.be/T7DgfZyn1nE

Step-wise Animations of chemistry concepts in PowerPoint **2014**
In comparison to a typical textbook figure where all elements are static and presented simultaneously, I designed PowerPoint slides with moving parts and different layers of information. This resource allows instructors to present chemical concepts as a story or a

process. I was the lead author in this project with two other collaborators. W. W. Norton distributes these "step-wise" animations to instructors to assist them in their teaching as of Fall semester 2014.

Diffraction Demonstration **2013-2014**
I collaborated with a colleague in the design and construction of a device which improves the way that diffraction of light and color perception is taught in the classroom. The device uses 3 laser pointers (red, green, and blue) passing through a diffraction grating to show how the human eye perceives color when two or more individual colors are combined. A HITS proposal for funding this project was awarded by the College of Physical Science and Mathematics at BYU. A training video for faculty can be found at: http://youtu.be/362g-Ml9sa0

1812 Combustion Demonstration **2012**
As part of a collaborative effort, I worked on a project which was a new twist on teaching combustion, using the 1812 Overture. Twelve different 1-L bottles with methanol vapor are ignited sequentially with the famous score by Tchaikovsky. I wrote the LabView program which electronically triggered the explosions in sync with the score. A video of this device can be viewed at: http://www.youtube.com/watch?v=5jdxLQSEq80

Publications:

J.H. Macedone; K. L. Gee; J. A. Vernon; Managing auditory risk from acoustically impulsive chemical demonstrations. *J.Chem. Ed*. **2014,** *91,* 1661-1666**.**

M.B. Muhlestein; K. L. Gee; J.H. Macedone; Educational demonstration of a spherically propagating acoustic shock. *J. Acoust. Soc. Am.* **2012,** *131*, 2422-2430.

K. L. Gee; J.H. Macedone; J. A. Vernon; Acoustical characterization of exploding hydrogen-oxygen balloons. *J. Acoust. Soc. Am.* **2012,** *131*, EL243-EL249.

K. L. Gee; J.H. Macedone; J. A. Vernon; Auditory Risk of Exploding Hydrogen-Oxygen Balloons. *J.Chem. Ed*. **2010,** *87,* 1039-1044**.**

P. B. Farnsworth; R. L. Spencer; W. N. Radicic, N. Taylor; J.H. Macedone; H. Ma; A comparison of ion and atom behavior in the first stage of an inductively coupled plasma mass spectrometer vacuum interface: Evidence of the effect of an ambipolar electric field. *Spectrochim. Acta, Part B* **2009**, *64*, 905–910.

J.H. Macedone; P. B. Farnsworth; Changes in plasma composition during the expansion into the first vacuum stage of an inductively coupled plasma mass spectrometer. *Spectrochim. Acta, Part B* **2006**, *61*, 1031–1038.

J. B. Olsen; J. H. Macedone; P. B. Farnsworth; Source gas kinetic temperatures in an ICP-MS determined by measurements of the gas velocities in the first vacuum stage. *J. Anal. At. Spectrom.* **2006**, *9*, 856-860.

A. A. Mills; J.H. Macedone; P. B. Farnsworth; High resolution imaging of Ba ions and atoms near the sampling cone of an inductively coupled plasma mass spectrometer. *Spectrochim. Acta, Part B* **2006**, *61*, 686–695.

W. N. Radicic; J. B. Olsen; R. V. Nielson; J. H. Macedone; Paul B. Farnsworth; Characterization of the supersonic expansion in the vacuum interface of an inductively coupled plasma mass spectrometer by high-resolution diode laser spectroscopy. *Spectrochim. Acta, Part B* **2006**, *61*, 686-695.

J.H. Macedone; A. A. Mills; P. B. Farnsworth; Optical Measurements of Ion Trajectories Through the Vacuum Interface of an Inductively Coupled Plasma Mass Spectrometer *Appl. Spectrosc.* **2004**, *58*, 463.

J. H. Macedone; D. J. Gammon; P. B. Farnsworth; Factors affecting analyte transport through the sampling orifice of an inductively coupled plasma mass spectrometer. *Spectrochim. Acta, Part B* **2001**, *56*, 1687.

Presentations:

* C. O. Hansen; R. A. Barlow; D. L. Eggett; J. H. Macedone; "Closing the Gap Between Student Performance and Potential," BYU Student Research Conference for the College of Physical Science and Mathematics, Provo, UT, March 2018.

* M. T. Porter; P. B. Farnsworth; C. R. Nelson; J. H. Macedone; "Shedding Light On Scorpion Fluorescence," BYU College of Life Sciences Undergraduate Poster Competition, Provo, UT, November 2015 (1st place winner).

* M. T. Porter; P. B. Farnsworth; C. R. Nelson; J. H. Macedone; "Fluorescence as a Means of Species Differentiation in Scorpions," BYU Student Research Conference for the College of Physical Science and Mathematics, Provo, UT, March 2015.

* M. T. Porter; P. B. Farnsworth; C. R. Nelson; J. H. Macedone; "Photobleaching as a Potential Source of Error in Studies of the Mystery of Scorpion Fluorescence," BYU Student Research Conference for the College of Physical Science and Mathematics, Provo, UT, March 2014.

J.H. Macedone; K. L. Gee; J. A. Vernon; "Optimizing Auditory Safety and Presentation Quality of High-Intensity Chemical Demonstrations," Biennial Conference on Chemical Education, State College, PA, August 2012.

* K. L. Gee; J. A. Vernon; J.H. Macedone; "Acoustical characterization of exploding hydrogen-oxygen balloons," Four Corners American Physical Society Meeting, Ogden UT, October 2010.

* K. L. Gee; M.B. Muhlstein; J.H. Macedone; "A demonstration of acoustic shock wave propagation," Four Corners American Physical Society Meeting, Ogden UT, October 2010.

J.H. Macedone; K. L. Gee; J. A. Vernon; “Managing auditory risk of hydrogen oxygen balloons: A formula for safety,” 21st Biennial Conference on Chemical Education, Denton, TX, August 2010.

* K. L. Gee, J. A. Vernon, J.H. Macedone; “Acoustical characterization of exploding hydrogen-oxygen balloons,” Acoustical Society of America Conference, Baltimore, MD April 2010.

* K. L. Gee, J. A. Vernon, J.H. Macedone; “Exploring auditory risk of exploding balloons,” Acoustical Society of America Conference, Baltimore, MD July 2009.

* H. Ma, J. H. Macedone, P. B. Farnsworth, “Fluorescence-Based Studies of Ion Transmission through the Skimmer Cone of an ICP-MS,” FACSS, Reno NV, September 2008.

* P. B. Farnsworth and J. H. Macedone, “Probing the ICP-MS Interface with Lasers: Where are the Ions Going?” invited lecture presented at the second Asia-Pacific Winter Conference on Plasma Spectrochemistry, Bangkok, Thailand, November 2006.

J. H. Macedone, H. Ma, and P. B. Farnsworth; “Atom and ion densities immediately upstream from the sampling cone of an ICP-MS,” invited lecture at FACSS, Orlando FL, September 2006.

* P.B. Farnsworth, A. A. Mills, J. H. Macedone, and J. B. Olsen, “An Experimental Overview of Atom and Ion Behavior in the First Vacuum Stage of an ICP-MS,” presented at the 2006 Winter Conference on Plasma Spectrochemistry, Temecula CA, January 2006.

* P. B. Farnsworth, J. H. Macedone, A. Mills; “Fundamental Characterization of the ICP/MS Interface for Improved Instrument Performance,” Pittcon, Orlando FL, 2005.

* P. B. Farnsworth, R. L. Spencer, A. Mills, J. H. Macedone, J. Krogel, J. Palmer; “A Comparison Between Experimentally Measured and Calculated Flows through the Sampling Cone of an Inductively Coupled Plasma Mass Spectrometer,” Pacifichem, Honolulu HI, 2005.

J. H. Macedone and P. B. Farnsworth; “Comparing Atom and Ion Transport Through the Sampling Orifice of an Inductively Coupled Plasma Mass Spectrometer,” presented at Pittcon, Chicago, IL, March 2004.

* P. B. Farnsworth, J. H. Macedone, and A. A. Mills, “Imaging of Ion Densities in the Sampling Cone of an ICP-MS by Planar Laser Induced Fluorescence,” presented at FACSS, Portland OR, October 2004.

J. H. Macedone, A. Mills, and P. B. Farnsworth, “A Comparison of Optical and Mass Spectrometric Measurements of Ion Density Profiles in an Inductively Coupled Plasma,” presented at FACSS, Ft. Lauderdale, FL, October 2003.

J. H. Macedone and Paul B. Farnsworth, “Comparison of Ion Transport Efficiencies Through the Vacuum Interface of an ICP-MS Using Center-Tapped and Reversed Load Coil Geometries,” presented at the 2002 Winter Conference on Plasma Spectrochemistry, Scottsdale, AZ, January 2002.

* Rebecca VanWagoner, Jeffrey H. Macedone, and Paul B. Farnsworth, “Velocity and Temperature Distributions in the First Vacuum Stage of an ICP-MS,” presented at the 2002 Winter Conference on Plasma Spectrochemistry, Scottsdale, AZ, January 2002.

* Presented by another author.

Acknowledgements:

R. G. Harrison, A. L. Washburn, A.T. Pickett, and D. M. Call; Assembly of CdSe nanoparticles into microspheres by a liquid droplet emulsion process. *J. Mater. Chem.*, **2008**, 18, 3718-3722.

J. Liu, X. Sun, P. B. Farnsworth, and M. L. Lee; Fabrication of Conductive Membrane in a Polymeric Electric Field Gradient Focusing Microdevice. *Anal. Chem.*, **2006**, 78(13), 4654.