FRANK. A. F. WINIBERG

fwiniberg@gmail.com +1 (626) 463 8917

EDUCATION

Feb 2010 – Jan 2014 Ph.D in Physical Chemistry, University of Leeds.

Oct 2005 – Jul 2009 MChem. Int. (Hons) in Chemistry, Upper Second Class (2:1), University of Leeds.

RESEARCH EXPERIENCE

Oct 2014 – Present NASA Postdoctoral Program, *Jet Propulsion Laboratory, Pasadena, CA*.

- Using Pulsed Laser Photolysis – Laser Induced Fluorescence (PLP-LIF) apparatus to investigate the reaction of nitric acid with OH radicals over a range of pressures and temperatures.
- Assisting graduate student with installation and characterisation of new frequency modulated IR diode lasers for the InfraRed Kinetic Spectroscopy apparatus.
- Collaborated with the Okumura group at Caltech. Helped run experiments using Mid-infrared Cavity Ringdown Spectroscopy, guided a graduate student and developed chemical kinetic simulation to aid data analysis in the investigation of nitric acid yields from the HO_2 + NO reaction (currently in preparation for publication).

Apr 2014 – Aug 2014 Postdoctoral Researcher, *School of Chemistry, University of Leeds*.

- Characterised a comprehensive chemical kinetics model to finalise an investigation into the product yields from the HO_2 + $CH_3C(O)O_2$ reaction.
- Trained PhD students and postdocs to use an atmospheric chamber and supporting instrumentation which I had developed during my PhD.

Feb 2010 – Jan 2014 Ph.D project, Prof. Paul Seakins and Prof Dwayne Heard groups, *School of Chemistry, University of Leeds.*

- Developed a low pressure, Laser Induced Fluorescence based OH and HO_2 (HO_x) radical detection instrument for use in an atmospheric simulation chamber and validated the conventional calibration method using two new calibration techniques in the atmospheric simulation chamber.
- Implemented the instrument in the investigation of products from the reaction of HO_2 + $CH_3C(O)O_2$ under STP conditions.
- Programmed instrument control, data acquisition and data analysis software using Labview, Delphi and Python to aid users of the instrument.
- Installed and characterised a new temperature control system for a ~2 m^3 stainless steel simulation chamber, giving the group new perspective on potential future investigations.

Oct 2008 – May 2009 MChem project, Prof. Paul Seakins group, *School of Chemistry, University of Leeds.*

- Preliminary investigation into alternative calibration methods for a laser based OH radical detection instrument using an atmospheric simulation chamber.
- Characterised a conventional HO_x calibration source for dedicated use with the HO_x detection instrument.

Jan 2008 – May 2008 Undergraduate year abroad, *Université Aix-Marseille 2, France*.

- Investigation into the bulk synthesis of functionalised helicenes for potential application in the treatment of HIV.

KEY SKILLS

Laboratory

Lasers	Experienced with Nd:YAG pumped dye lasers and Ti:Sapphire lasers, including high repetition frequency diode pumped Nd:YAG systems. Also proficient with excimer/exciplex and OPO/OPA laser systems.
Detection methods	Experienced with online sampling gas phase GC-FID systems with working knowledge of derivatisation and pre-concentration of samples for GC analysis. Working knowledge of mass spectrometry, FTIR spectroscopy coupled to longpath multipass optic cells, cavity ringdown spectroscopy, commercial UV photometric O_3 and chemiluminescence NO_x analysers and dew-point hygrometers.
Data Acquisition	Monitoring and control of peripheral devices using computers; including A/D, mass flow controllers, photon counters and multi-channel scalers.
Other	Experienced with vacuum technology, microwave discharge systems and atmospheric chambers.

Computing

Programming	Highly experienced in LabView. Experienced in Python and VBA with a working knowledge of Delphi 7, C and Fortran 77. Developed LabView software which automated the simultaneous control and data acquisition for multiple measurement devices.
Data analysis	Proficient with large dataset analysis in Python and Igor PRO. Graphing with Origin Pro, Igor PRO and Python. I developed an iterative non-linear least squares analysis algorithm using LabView to help quantitatively analyse convoluted FTIR spectra.
Chemical simulations	Constructed 0-D box models based on known mechanisms to simulate data from atmospheric chamber and smaller scale kinetic experiments. Interfaced the Master Chemical Mechanism with Kintecus, AtChem and Facsimile modelling packages.
Teaching	**Laboratory Demonstrating (2010 – 2013):** 1st and 2nd year undergraduate physical chemistry laboratory, University of Leeds. **Lecturing Assistant (2011 – 2012):** 1st year undergraduate Maths for Chemists course.
Management and Teamwork	I have worked as part of a dynamic team in both my PhD and postdoc positions. As a senior PhD student, I helped to manage time and people to efficiently use the communal laboratory equipment, delegating where necessary. I was also responsible for the training of new group members on the laboratory techniques used in the Seakins group. Since starting my postdoc at JPL, I helped guide a graduate student in a collaboration project with the Okumura group at Caltech.
Communication	Oral and poster presentations at international conferences (e.g. the 8th International Conference of Chemical Kinetics, Seville and AGU fall meeting 2015, San Francisco). Regular group seminars and internal physical chemistry presentations.
Languages	Native English; fluent French; basic German and Spanish.