Curriculum Vitae — Dr. I. Philip Mortimer

Personal Details

Date of Birth : 17/10/1973

Nationality : Dual British / Canadian

US Residency : Permanent Resident

Contact Address : Chemistry Department MS Facility,
Rm. B.13, Remsen Hall,
The Johns Hopkins University,
3400 N. Charles St.,
Baltimore, MD 21218, USA.

Phone : +1-410-516-5552

e-mail : mass.spec@jhu.edu

Education and Qualifications.

1995 - 2000 **Ph.D. - University of Wales Swansea, UK**

"*Studies of Plasma Processes within Argon Glow Discharges by Fast Flowing Glow Discharge Mass Spectrometry.*" *- Adviser : Dr R S Mason - Department of Chemistry*

- Conducted experimental scientific research into fundamental processes occurring within argon glow discharge plasmas.
- Developed experience in experimental scientific research, including design and development of mass spectrometric instrumentation, experimental techniques, and analysis and dissemination of results.
- Skilled in the operation and maintenance of magnetic sector and quadrupole based mass spectrometers, as well as in both practical high vacuum techniques and basic electronics.

1992 -1995 **B.Sc. (Honours) - University of Wales Swansea, UK**

Chemistry and Analytical Science - First Class Honours Awarded.

- A firm basis in aspects of organic, inorganic, physical and analytical chemistry.
- Lectures and practical courses in the main chemical fields, with experience in synthetic methods and investigative experimental techniques.
- Courses on the theory, design and application of modern instrumental analytical chemical techniques, including IR, UV-Vis, GC, HPLC, MS and NMR.
- Research project investigating fatty-acid composition of edible fats and oils by GC.

Professional Scientific Employment

09/04 - **The Johns Hopkins University, Baltimore, Maryland, USA – Facility Manager**

Chemistry Department Mass Spectrometry Facility

- Experimental officer supervising operation, maintenance and upgrading of departmental mass spectrometry instrumentation.
- Responsible for procurement, refurbishment, upgrading and operation of VG70S and VG70SE double-focussing magnetic sector mass spectrometers equipped with EI, CI and FAB ionisation methods, to provide high resolution accurate mass services to departmental and external researchers.
- Responsible for maintenance, operation and training of graduate and post-doctoral research personnel in the applications and operation of other departmental MS instrumentation, including Kratos Kompact SEQ MALDI-ToF, Bruker Autoflex III Maldi-ToF, Shimadzu GC17/QCP5050A GC-MS and Finnigan LCQDeca and LCQDuo LC-ESI-ITMS instruments.
- Overhauled and re-established facility operations.
- Developed facility operating procedures and protocols.
- Provide assistance and guidance to graduate researchers with development of experimental methods involving departmental MS instrumentation.
- Developed introductory courses on mass spectral techniques and applications
- Participant in successful grant application process for replacement of outdated Kratos Kompact SEQ instrument with state of the art Bruker Autoflex III Maldi-ToF/ToF instrument (grant awarded 2009 and instrument installed 6/09)

12/02 - 09/04 **Aerodyne Research, Inc., Massachusetts, USA – Senior Scientist**

Center for Aerosol and Cloud Chemistry - Director : Dr D Worsnop

- Conducted laboratory and field based research into aerosols and atmospheric chemistry using the novel aerosol mass spectrometer developed at ARI.
- Furthered development of the Aerodyne Aerosol Mass Spectrometer (AMS).
- Responsible for final assembly, testing, calibration and deployment of production Aerodyne AMS instruments to clients.
- Responsible for providing AMS customer support, training and assistance.

04/00 – 11/02 **University of Wales Swansea, UK – Senior Research Officer**

"The Experimental Development of Fast Flowing Glow Discharge Ion Sources for Automated GDMS Instrumentation" - Supervisor : Dr R S Mason - Chemistry Department

- Conducted fundamental research into atomisation and ionisation processes occurring within fast flowing argon plasmas as part of an EU funded collaborative research project.
- Operated mass spectrometers (principally VG Elemental PQ2 ICP-MS) acting as test-beds for development of commercial flowing glow discharge ion sources.
- Conducted design and development of high vacuum instrumentation.
- Provided bi-monthly written reports to project co-ordinator and oral presentation of results to partners. Additional presentation of work at scientific meetings.
- Conducted maintenance of other research group mass spectrometers (2 AEI MS9 magnetic sector and a Hiden EQP RGA Quadrupole) and departmental teaching instruments.
- Assist and direct research group students.
- Organised level 1 and 2 physical chemistry practical classes.

Publications and Presentations

Conference Presentations

Studies of Ionisation in the Glow Discharge Plasma using a Novel Fast Flowing Glow Discharge Ion Source, R S Mason, P D Miller, I P Mortimer, 22nd British Mass Spectrometry Society Three Day Meeting, University of Wales Swansea, Swansea, UK, 8th – 11th September, 1996.

The Chemical Nature of an Argon Plasma, R S Mason, I P Mortimer, Workshop on Plasma Diagnostics, Oxford, UK, September, 1998.

The Chemical Nature of an Argon Plasma, R S Mason, D J Mitchell, I P Mortimer, EW-GDS / EC-GDS Network Mid-Term Meeting, University of Kingston, Surrey, UK, 20th – 21st July 2000.

Recent Developments with FF-GDMS, I P Mortimer, R S Mason, Combined EC-GDS Network Expert Meetings on the Comparison Between Glow Discharge Modelling And Experiments and Ion Source Development, Antwerp, Belgium, 21st – 23rd March 2001.

Evidence for the Role of Highly Excited Neutral Argon Species as Ionisation Precursors in Fast Flowing Argon Glow Discharges, R S Mason, D J Mitchell, I P Mortimer, D R Williams, EW-GDS / EC-GDS Network Final General Meeting, Wiener Neustadt, Austria, 3rd – 6th March 2002.

The Glow Discharge Plasma is a Rydberg Gas, R S Mason*, I P Mortimer, D J Mitchell and N A Dash, 18th International Symposium on Gas Kinetics, Bristol, UK, 7th – 12th August 2004.

Poster Presentations

The Quenching Effects of Different Gases on Chemi-ionisation Processes in an Argon Plasma, I P Mortimer, R S Mason, EW-GDS / EC-GDS Network Mid-Term Meeting, University of Kingston, Surrey, UK, 20th – 21st July 2000,

The Excited State Neutral Character of a Direct Current Argon Glow Discharge Plasma, D J Mitchell, I P Mortimer, R S Mason, D R Williams, 2001 Winter Conference on Plasma Spectrochemistry, 4th – 8th February, 2001, Hafjell, Lillehammer, Norway.

Fast Flowing Glow Discharge Mass Spectrometry, I P Mortimer, R S Mason, P D Miller, D J Mitchell, D R Williams, D Gilmour, 2001 Winter Conference on Plasma Spectrochemistry, 4th – 8th February, 2001, Hafjell, Lillehammer, Norway.

Peer Reviewed Articles

The Anomalous Loss of Ionisation in Argon Hydrogen Plasma studied by Fast Flow Glow Discharge Mass Spectrometry, R. S. Mason, P. D. Miller, I. P. Mortimer, *Phys. Rev. E*, 1997, 55, pp 7462-7472.

Ionisation at the Glow Discharge Plasma Boundary Studied by Fast Flow Glow Discharge Mass Spectrometry, R S Mason, I P Mortimer, D R Williams, D Gilmour, *The Proceedings of the XIVth International Conference on Gas Discharges and Their Applications*, 2002.

Reactions of Gases Titrated Into the Fast Flowing Plasma of a DC Glow Discharge Studied by Mass Spectrometry, R S Mason, I P Mortimer, N A Dash, D J Mitchell, *The Proceedings of the XIVth International Conference on Gas Discharges and Their Applications*, 2002.

Positive Column Plasma Studied by Fast-Flow Glow Discharge Mass spectrometry: Could it be a Rydberg gas?, R S Mason, P. D. Miller, I P Mortimer, D. J. Mitchell, N. A Dash, *Phys. Rev. E,* 2003, 68, DOI 016408.

The Addition of H_2 to an Ar Plasma Studied by Fast Flow Glow Discharge Mass Spectrometry (FFGD-MS): Mechanism and Relative Sensitivities, K Newman, R S Mason, D R Williams, I P Mortimer, *J. Anal. Atom Spectrom.*, 2004, 19, pp 1192-1198

Ion Formation at the Boundary Between a Fast Flow Glow Discharge Ion Source and a Quadrupole Mass Spectrometer, R S Mason, D M Williams, I P Mortimer, D J Mitchell, K Newman*, J. Anal. Atom Spectrom.*, 2004, 19, pp 1177-1185

Characterization of Ambient Aerosols in Mexico City during the MCMA-2003 Campaign with Aerosol Mass Spectrometry. Part I: Quantification, Shape-Related Collection Efficiency, and Comparison with Collocated Instruments, D Salcedo, K Dzepina, T B Onasch, M R Canagaratna, J A Huffman, P F DeCarlo, J T Jayne, I P Mortimer, D R Worsnop, C E Kolb, K S Johnson, B Zuberi, L C Marr, L T Molina, M J Molina, B Cardenas, R M Bernabé, C Márquez, J S Gaffney, N A Marley, A Laskin, V Shutthanandan, J L Jimenez, *Atmos. Chem. Phys. Discuss.*, 2005, 5, pp 4143-4182.

Characterization of ambient aerosols in Mexico City during the MCMA-2003 campaign with Aerosol Mass Spectrometry: Results from the CENICA Supersite, D Salcedo, T B Onasch, K Dzepina, M R Canagaratna, Q Zhang, J A Huffman, P F DeCarlo, J T Jayne, P Mortimer, D R Worsnop, C E Kolb, K S Johnson, B Zuberi, L C Marr, R Volkamer, L T Molina, M J Molina, B Cardenas, R M Bernabé, C Márquez, J S Gaffney, N A Marley, A Laskin, V Shutthanandan, Y Xie, W Brune, R Lesher, T Shirley, J L Jimenez; *Atmos. Chem. Phys.*, 2006, 6, pp 925-946.

Chemical Properties of Aircraft Engine Particulate Exhaust Emissions Sampled during APEX, T B Onasch, J T. Jayne, S Herndon, Douglas R. Worsnop, Richard C. Miake-Lye, I P Mortimer, B. Anderson, J. Prop Power 2009, Accepted for publication.

Field Work

MCMA-2003 –Mexico City, Mexico (4/03).
Comprised part of mission crew deployed with Aerodyne Mobile Laboratory to Mexico City with primary responsibility for operation and maintenance of Aerodyne AMS.
Study comprised both fixed site and mobile air quality measurements – mobile measurements consisted of both "mapping" experiments investigating emissions from residential, commercial and industrial sources and "chase" experiments investigating emissions from private cars, taxis, commercial vehicles, mini-buses, busses and heavy duty diesel trucks

Incinerator Emission Studies – Wareham, Mass, USA (6/03) and Hartford, CT, USA (10/03)
Conducted field studies as part of a larger campaign to detect and quantitatively measure particulate emissions from different types of incinerator. The studies were also used to assess the capabilities of the Aerodyne AMS for this type of application. Experiments consisted of monitoring the stack emissions for a variety of different operating incinerator parameters over extended periods of time.

Aircraft Particle Emissions Experiment (APEX) – Dryden Flight Research Center, Edwards Air Force Base, California, USA (04/04)
Member of mission crew deployed with Mobile Laboratory to EAFB, CA - Primary responsibility for operation and maintenance of the onboard Aerodyne AMS.

Study involved measuring and investigating particulate and gas phase emissions from commercial Turbofan Aero-engines by sampling jet exhaust at different points from engine tailpipe under a range of different power and fuel conditions.

Professional Society Memberships

Member American Society of Mass Spectrometry
Member Canadian Society of Mass Spectrometry

Other Interests and activities

DIY, Photography, Classical Music, Political and Military History, Transport, Architecture

Other Skills

Hold clean UK and Maryland (US) driving licences with experience of driving large vehicles (vans, small trucks, minibuses, etc).

Computer literate with experience in working with Windows and DOS based PC's, and most common applications. Some experience of more specialised software such as Simion 6, Tablecurve 2D, ChemWindows and IGOR Pro. Experience with MSS (now MasCom) MasSpecII[32] Data system software.

Basic machining and metalworking skills including use of lathes, drills and milling machines, brazing and other techniques.

Basic electrical and electronic knowledge.