

CURRICULUM VITAE

Richard Mabbs Ph.D., B.Sc., MRSC

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Education:

Ph.D. in Physical Chemistry, University of Nottingham, Nottingham, UK, 1995
Thesis Title: 'Unimolecular Photodissociation Dynamics'
Supervisor: Dr. Mark Brouard

B.Sc. Hons. Chemistry (2[i]), University of Nottingham, Nottingham, UK, 1990

Professional History:

Jul 2005-

Assistant Professor, Chemistry Department, Washington University in St. Louis, MO

Aug 2002-Jun 2005

Postdoctoral Research Associate (with Prof. Andrei Sanov), Chemistry Department, University of Arizona, Tucson, AZ

Jan 1998- Jul 2002

Lecturer in Chemistry, University of Botswana, Gaborone, Botswana

1996-1997

Data Chemist, Okavango Pharmacy Pty., Maun, Botswana

1994-1995

Research Tech., International Combustion Ltd., Derby, UK

Research Interests:

Physical chemistry/chemical physics of anionic species and clusters; interaction of electrons with neutral atoms and molecules; chemical reaction dynamics of photon and electron capture induced reactions; structure of molecular and cluster anions.

Research Support:**Active:**

National Science Foundation Faculty Early Career Development (CAREER) Award: # CHE - 0748738

“CAREER: Femtosecond Time Resolution in Electron Collision Initiated Reactions”

3/1/2008-2/28/2013

\$607,120

Expired:

American Chemical Society Petroleum Research Fund Series G: #45076-G6

“Electron Transfer in Cluster Anions – Dissociative Electron Attachment Processes in Real Time”

9/1/2006-8/31/2008

\$35,000

Publications:

Photoelectron Imaging: Advanced Research Techniques as Teaching Tools

R. Mabbs, K. Pichugin, E. Grumbling, A. Sanov*

Accepted for publication (*J. Chem. Ed.*)

$\Gamma \cdot (\text{CH}_3\text{I})_2$ Photoexcitation: The Influence Of Dipole Bound States On Detachment And Fragmentation

M. Van Duzor, F. Mbaiwa, J. Lasinski, N. Holtgrewe, and R. Mabbs*

J. Chem. Phys. **134**, 214301, 2011

Near Threshold $\text{Cl}^- \cdot \text{CH}_3\text{I}$ Photodetachment: Apparent $^2P_{1/2}$ Channel Suppression and Enhanced $^2P_{3/2}$ Channel Vibrational Excitation

M. Van Duzor, J. Lasinski, F. Mbaiwa, D. Dao, N. Holtgrewe, R. Mabbs*

J. Chem. Phys. **134**, 184315, 2011

Vibronic Coupling in the Superoxide Anion: The Vibrational Dependence of the Photoelectron Angular Distribution

M. Van Duzor, F. Mbaiwa, J. Wei, T. Singh, R. Mabbs*, A. Sanov, S.T. Gibson, S. J. Cavanagh, B.R. Lewis, J.R. Gascooke

J. Chem. Phys. **133**, 174311, 2010

Photodetachment from $\Gamma \cdot \text{CH}_3\text{X}$ ($X=\text{I}, \text{Br}, \text{Cl}$)

M. Van Duzor, F. Mbaiwa, J. Wei, R. Mabbs*

J. Chem. Phys., **133**, 144303, 2010

Observation of Vibration-Dependent Electron Anisotropy In O_2^- Photodetachment

R. Mabbs*, F. Mbaiwa, J. Wie, M. Van Duzor, S.T. Gibson, S. J. Cavanagh, B.R. Lewis

Physical Review A **82**, 011401(R), 2010

Threshold Effects in $\Gamma \cdot \text{CH}_3\text{CN}$ and $\Gamma \cdot \text{H}_2\text{O}$ Cluster Anion Detachment: The Angular Distribution as an Indicator of Electronic Autodetachment

F. Mbaiwa, J. Wei, M. Van Duzor, R. Mabbs*

J. Chem. Phys., **132**, 134304, 2010

Direct and Indirect-Detachment in the Iodide-Pyrrole Cluster Anion: The Role of Dipole Bound and Neutral Cluster States

F. Mbaiwa, M. Van Duzor, J. Wei, R. Mabbs*

J. Phys. Chem. A, **114**, 1539, 2010

Intra-Cluster Photoelectron Interactions: Scattering and Dissociative Attachment in Halide-Methyl Halide Cluster Anions

R. Mabbs*, M. Van Duzor, F. Mbaiwa, J. Wei

J. Phys. Conf. Ser., **194**, 012051, 2009

The Effect of Intra-Cluster Photoelectron Interactions on the Angular Distribution in $\Gamma \cdot \text{CH}_3\text{I}$ Photodetachment

M. Van Duzor, J. Wei, F. Mbaiwa, R. Mabbs*

J. Chem. Phys. **131**, 204306, 2009

Photoelectron Imaging: An Experimental Window into Electronic Structure

R. Mabbs*, E. Grumblin, K. Pichugin, A. Sanov

Chem. Soc. Rev. **38**, 2169, 2009

Photoelectron imaging of negative ions

A. Sanov* and R. Mabbs

Int. Rev. Phys. Chem. **27**, 53, 2008

Photochromism, anomalous multi-banded fluorescence and laser properties of some amino- and tosyl-amino derivatives of oxadiazole

N. Nijegorodov, V. Zvolinski, P.V.C. Luhanga*, R. Mabbs and J. Ahmad

Spectrochim. Acta A. **65**, 196, 2006

Dynamic Molecular Interferometer: Probe of Inversion Symmetry in I_2^- Photodissociation

R. Mabbs, K. Pichugin and A. Sanov*

J. Chem. Phys. **123**, 054329, 2005

[Reprinted as selected article in Virtual Journal of Ultrafast Science, Vol. 4(9), 2005]

Time-resolved imaging of the reaction coordinate

R. Mabbs, K. Pichugin and A. Sanov*

J. Chem. Phys. **122**, 174305, 2005

[Reprinted as selected article in Virtual Journal of Ultrafast Science, Vol. 4(6), 2005]

Effects of Solvation on the Photoelectron Angular Distributions within $(\text{CO}_2)_n^-(\text{H}_2\text{O})_m$

E. Surber, R. Mabbs, T. Habteyes and A. Sanov*

J. Phys. Chem. A **109**, 4452, 2005

Solvation Effects on Photoelectron Anisotropy and Photodetachment Cross Section

R. Mabbs, E. Surber and A. Sanov*

J. Chem. Phys. **121**, 054308, 2005

Time Resolved electron detachment imaging of the Γ channel in I_2Br^- photodissociation

R. Mabbs, K. Pichugin, E. Surber and A. Sanov*

J. Chem. Phys., **121**, 265, 2004

[Reprinted as selected article in Virtual Journal of Ultrafast Science, Vol. 3(7), 2004]

Effects of solvation and core switching on the photoelectron angular distributions from $(CO_2)_n^-$ and $(CO_2)_n^- \cdot H_2O$

R. Mabbs, E. Surber, L. Velarde and A. Sanov*

J. Chem. Phys., **120**, 5148, 2004

An experimental manifestation of distinct electronic-structural properties of covalent dimer anions of CO_2 and CS_2

R. Mabbs, E. Surber and A. Sanov*

Chem. Phys. Lett., **381**, 479, 2003

Photoelectron Imaging of Negative Ions: Atomic Anions to Molecular Clusters

R. Mabbs, E. Surber and A. Sanov*

Analyst, **128**, 765, 2003

Probing the electronic structure of small molecular anions by photoelectron imaging

E. Surber, R. Mabbs and A. Sanov*,

J. Phys. Chem. A **107**, 8215, 2003

Comprehensive Study of Solar Conditions in Mozambique: The Effect of Trade Winds on Solar Components

N. I. Nijegorodov*, K. R. S. Devan, H. Simao and R. Mabbs

Renew. Energ., **28**, 1965, 2003

Fluorescence and Laser Properties of D_2 -, C_2 and D_3 -Symmetry Series Oligophenylenes

R. Mabbs*, N. Nijegorodov and W. S. Downey

Spectrochim. Acta A, **59** 1329, 2003

Influence of Weak and Strong Donor Groups on the Fluorescence Parameters and the Intersystem Crossing Rate Constant

N. Nijegorodov, R. Mabbs* and D. P. Winkoun

Spectrochim. Acta A, **59**, 595, 2003

Luminescence-Laser Classification of Heteroaromatic and Aromatic Compounds

N. Nijegorodov* and R. Mabbs

Spectrochim. Acta A, **58**, 349, 2001

Evolution of Absorption, Fluorescence, Laser and Chemical Properties in the Series of Compounds Perylene, Benzo(ghi)perylene and Coronene

N. Nijegorodov*, R. Mabbs and W. S. Downey

Spectrochim. Acta A. **57**, 2673, 2001

The Influence of Molecular Symmetry and Topological Factors on the Internal Heavy Atom Effect in Aromatic and Heteroaromatic Compounds

N. Nijegorodov* and R. Mabbs

Spectrochim. Acta A. **57**, 1449, 2001

The Dependence of the Fluorescence Properties, Laser Properties and Photochemical Stability of Aromatic Compounds on the Molecular Symmetry

N. Nijegorodov* and R. Mabbs

Spectrochim. Acta A., **56**, 2157, 2000

Vibrationally Mediated Photodissociation of H₂O₂ (4v_{OH}): Rotational State Dependent Photodissociation Cross Sections and Vibrational State Mixing

M. Brouard* and R. Mabbs

Chem. Phys. Lett., **204**, 543, 1993