

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

Address:

Department of Chemistry
Washington University in St. Louis
Campus Box 1134
One Brookings Drive
St. Louis, MO 63130-4899
Tel/Fax. (314) 935 5928/(314) 935 4481
mabbs@wustl.edu

Date of Birth: 5th September, 1968

EDUCATIONAL HISTORY

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

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

EMPLOYMENT HISTORY

Jul 2005-

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

Aug 2002-Jun 2005

Postdoctoral Research Associate (with Prof. Andrei Sanov), Chemistry Department, University of Arizona, Tucson, Arizona 85721-0041, USA

1998- Jul 2002

Temporary (Expatriate) Full Time Lecturer in Chemistry, University of Botswana, Gaborone, Botswana

1996-1997

Data Chemist, Okavango Pharmacy Pty., Maun, Botswana

1994-1995

Temporary, Full Time Research Tech., International Combustion Ltd., Derby, UK

PROFESSIONAL AFFILIATIONS

Member, Royal Society of Chemistry.
Member, American Chemical Society
Member, European Photochemistry Association
Member, Optical Society of America

RESEARCH INTERESTS

My research interests center around studies of the electronic structure. My group focuses on time resolved (fs) dynamics and electronic structure evolution in anionic species and clusters, either in photoinduced or electron transfer induced processes. These latter processes are particularly important in the molecular level study of dissociative electron attachment, a widely occurring phenomenon. Our work also aims to reveal insights into the electronic structure of stable molecular species and anion – molecule binding interactions.

EXTERNAL FUNDING

Active:

NSF Faculty Early Development (CAREER) Program 05-579

“CAREER: fs Time resolved electronic and geometric structure evolution in electron collision induced reactions”

Total: \$607,120

Past:

ACS-PRF Type G #45076-G6: “Electron Transfer in Cluster Anions – Dissociative Electron Attachment Processes in Real Time”

9/1/2006-8/31/2008 \$35,000

PUBLICATIONS

Journal Articles

Photoelectron Imaging: An Experimental Window into Electronic Structure

R. Mabbs, E. Grumblin, K. Pichugin, A. Sanov
In Press Chem. Soc. Rev.

Photoelectron imaging of negative ions

A. Sanov and R. Mabbs, *Int. Rev. Phys. Chem.* Vol. 27, 53-85, 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, *Spectrochimica Acta Part A.* Vol. 65, 196-205, 2006

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

R. Mabbs, K. Pichugin and A. Sanov, *Journal of Chemical Physics* Vol. 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, *Journal of Chemical Physics* Vol. 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 $(CO_2^-)_n(H_2O)_m$

E. Surber, R. Mabbs, T. Habteyes and A. Sanov, *Journal of Physical Chemistry A* Vol. 109, 4452-4458, 2005

Solvation Effects on Photoelectron Anisotropy and Photodetachment Cross Section

R. Mabbs, E. Surber and A. Sanov, *Journal of Chemical Physics* Vol. 121, 054308, 2005

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

R. Mabbs, K. Pichugin, E. Surber and A. Sanov, *Journal of Chemical Physics*, Vol. 121, p265-272, 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, *Journal of Chemical Physics*, Vol. 120, p5148-5154, 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, *Chemical Physics Letters*, Vol. 381, p479-485, 2003

Photoelectron Imaging of Negative Ions: Atomic Anions to Molecular Clusters

R. Mabbs, E. Surber and A. Sanov, *Analyst*, Vol. 128, p765-772, 2003

Probing the electronic structure of small molecular anions by photoelectron imaging

E. Surber, R. Mabbs and A. Sanov, *Journal of Physical Chemistry A.* Vol.107, p8215-8224, 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, *Renewable Energy*, Vol. 28, p1965-1983, 2003

Fluorescence and Laser Properties of D_{2^-} , C_2 and D_3 -Symmetry Series Oligophenylenes

R. Mabbs, N. Nijegorodov and W. S. Downey, *Spectrochimica Acta Part A*, Vol. p1329-1339, 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, *Spectrochimica Acta Part A*, Vol. 59, p595-606, 2003

Luminescence-Laser Classification of Heteroaromatic and Aromatic Compounds

N. Nijegorodov and R. Mabbs, *Spectrochimica Acta Part A*, Vol. 58, p349-361, 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, *Spectrochimica Acta Part A.* Vol. 57, p2673 - 2685, 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, *Spectrochimica Acta Part A.* Vol. 57, p1449-1462, 2001

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

N. Nijegorodov and R. Mabbs, *Spectrochimica Acta Part A.*, Vol. 56, p2157-2166, 2000

Vibrationally Mediated Photodissociation of H_2O_2 ($4\nu_{OH}$): Rotational State Dependent Photodissociation Cross Sections and Vibrational State Mixing

M. Brouard and R. Mabbs, *Chemical Physics Letters*, Vol. 204, p543, 1993