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EDUCATION

- 1992-1993 *Post-Doctoral Research Associate*, Department of Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, Minnesota. Advisor: Professor Michael D. Ward,
Research focus: Crystal Growth and Design, Biologically induced corrosion and self-assembled monolayers
- 1986-1990 Ph.D., Chemistry, University of Southern California, Los Angeles, California. Advisor: Professor Larry R. Dalton
Research focus: Polymer chemistry, optical and electrical properties of organic and polymeric materials.
Thesis Title: "*Synthesis and Characterization of New Organic Materials for Nonlinear Optical Applications*".
- 1981-1985 B.S. in Chemistry and Physics, Excellence, Qatar University, Doha, Qatar.

EXPERIENCE

- 2013- Present *Professor of Chemistry*, Alfaisal University, Riyadh, Kingdom of Saudi Arabia
- 2013- 2014 *Professor of Chemistry and Vice Provost for Academic Affairs*, Alfaisal University, Riyadh, Kingdom of Saudi Arabia
Responsible for all academic issues in the university
- 2012-2013 *Professor of Chemistry, Discipline Coordinator*, Division of Science, University College, Penn State University, University Park
- 2003-2012 *Associate Professor of Chemistry*, Pennsylvania State University, Hazleton, Pennsylvania
- 1997-2003 *Assistant Professor of Chemistry*, Pennsylvania State University, Hazleton, Pennsylvania
- 1993-1997 *Assistant Professor of Chemistry*, United Arab Emirates University, Al-Ain, United Arab Emirates.
- 1992-1993 *Post-Doctoral Research Associate*, Department of Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, Minnesota. Advisor: Professor Michael D. Ward
- 1990-1992 *Visiting Researcher, HIVIPS Program*
Hitachi Research Laboratory, Department of Organic Materials: Nonlinear Optics and Liquid Crystals Group, Hitachi City, Ibaraki Prefecture, Japan. Supervisor: Dr. A. Kakuta

1986-1990 Teaching and Research Assistant, Department of Chemistry, University of Southern California

1985 Teaching and Research Assistant, Department of Chemistry, Kuwait University

ASSOCIATIONS

1. Member of the American Chemical Society (ACS), 1986-present.
2. Member of the Materials Research Society, 1989-present.

TEACHING EXPERIENCE

- Taught several undergraduate and graduate level chemistry courses (both lab and lecture) at several institutions over the past 22 years
- Supervised and trained lab technicians, lab assistants, teaching assistants, graduate and undergraduate students, part time and adjunct instructors.
- Initiated, supervised, and implemented the renovation of teaching laboratories, upgrading instrumentation rooms, and the design of new experiments for 1st and 2nd year chemistry laboratory courses with emphasis on enhancing safety and environmental issues.
- Supervised more than 60 undergraduate research students, some were co-authors on refereed journal and conference proceedings articles and many presented their work at local, regional, national and international conferences.
- Supervised summer research students (30 students for ten weeks each year from universities across the US) at the Materials Research Science and Engineering Center at the University of Minnesota and New York University in summers 2000-2012, funded by the NSF
- Arranged summer research positions and internships for undergraduates at companies and research universities. Many of these students have gone to pursue graduate and professional schools.

CURRENT RESEARCH INTERESTS

1. Crystal growth of organic functional materials
2. Synthetic chemistry for molecular *nano* wires
3. Design of new Electron Acceptors for Solar Cells Applications
4. Design of New n-Type and *Ambipolar* Organic Semiconductors
5. Inhibition of kidney stones formation using crystal engineering
6. New polymorphs of pharmaceuticals with solubility and thermal stability problems
7. Computational Materials Chemistry
8. Development of new materials chemistry experiments for the undergraduate curriculum
9. applications of nanotechnology in environmental, water, energy and drug delivery
10. bio and chemical sensors

PUBLICATIONS

1. Pham, P.-T. T., Bader, M. M., "Structural Studies on Some Oligothiophenes and Ethylenedioxythiophenes"; MRS Online Proceedings, **2015**, 1799, 19-28.
2. Pham, P.-T. T., Bader, M. M., **2014**, "Inter- and Intramolecular Interactions in Some Bromo- and Tricyanovinyl-Substituted Thiophenes and Ethylenedioxythiophenes" Cryst. Growth & Design. **14**, 916–922.
3. Salim, A., Bader, M. M. et.al "Micro-electro-chemical-sensor (MECS) Technology Based on All-solid-state Ion-selective Electrodes for Physiological Research." *Journal of Visualized Experiment*, **2013**, 74, e50020, doi:10.3791/50020.
4. "Structures of Brominated Oligothiophenes and Ethylenedioxythiophenes: A Combined Experimental and Theoretical Study", Bader, Mamoun M.; Pham, Phuong-T. Materials Research Society, *Charge Generation/Transport in Organic Semiconductor Materials*, **2012**, Ed., J. Anthony. *MRS Online Proceedings Library* 1402.
5. "Dicyanovinyl-Substituted Oligothiophenes", Bader, Mamoun M.; Pham, Phuong-T.; Elandaloussi, El Hadj, *Crystal Growth & Design*, **2010**, *10* (12), pp 5027–5030.

6. "Microstructural Investigation of Gamma-Irradiated Ultra High Molecular Weight Polyethylene in Nitrogen Atmosphere", M. Al-Ma'adeed , N.J. Al-Thani , Mamoun M. Bader, *Avanced Materials Research*, **2010**, 83-86, 505-523.
7. "(1E,3E,5E,7E)-4,40-(Octa-1,3,5,7-tetraene-1,8-diyl) dipyridine", Muhammad Nadeem Arshad, Mamoun M. Bader, Phuong-Truc T. Pham and K. Travis Holman, *Acta Cryst.* **2010**, E66, o508.
8. "Extended 7,7,8,8-Tetracyano-p-quinodimethane-Based Acceptors: How Molecular Shape and Packing Impact Electron Accepting Behavior", Mamoun M. Bader, Phuong-Truc T. Pham, Basant R. Nassar, Hui Lin, Yu Xia, C. Daniel Frisbie, *Crystal Growth & Design*, **2009**, 9 , 4599–4601.
9. "2,5-Bis(5-bromo-2-thienyl)thiophene" , Mamoun M. Bader, *Acta Cryst.* **2009**. E65, o2119.
10. "4-[(1E,3E,5E)-6-(4-Pyridyl)hexa-1,3,5- trienyl] pyridine", Mamoun M. Bader, *Acta Cryst.* **2009**. E65, o2006.
11. "Single Crystal Field Effect Transistor of a Y-Shaped Ladder-Type Oligomer", Pham, Phuong-T.; Yu, Xia; Frisbie, C. Daniel; Bader, Mamoun, *J. Phys. Chem.C*, **2008**, 112, 7968-7971.
12. "Fused heterocyclic aromatics as potential organic semiconductors: a theoretical study", Al-Tal, Faleh; Pham, Phuong-T. T.; Al-Maadeed, Mariam Ali; Bader, Mamoun M. *Materials Research Society Symposium Proceedings*, **2008**, 1091E (Conjugated Organic Materials), 1091-AA07-69.
13. "Microstructural changes in gamma-irradiated ultra high molecular weight polyethylene" Al-Maadeed, Mariam; Al-Thani, Nora J.; Bader, Mamoun M. *Polymer Preprints*, **2008**, 49(1), 856-857.
14. "N- and P-Channel Transport Behavior in Thin Film Transistors Based on Tricyanovinyl-Capped Oligothiophenes" Cai, Xiuyu; Burand, Michael W.; Newman, Christopher R.; da Silva Filho, Demetrio A.; Pappenfus, Ted M.; Bader, Mamoun M.; Bredas, Jean-Luc; Mann, Kent R.; Frisbie, C. Daniel. *J. Phys. Chem. B* **2006**, 110, 14590-14597.
15. "Hydrogen-Bonded Host Frameworks with Tunable Cavities: Structural Characterization and Inclusion-Based Separations of Molecular Isomers", Horner, Matthew J.; Grabowski, Sara; Sandstrom, Kevin; Holman, K. Travis; Bader, Mamoun; Ward, Michael D.; Kim, Woo-Sik. *Amer. Cryst. Assoc. Trans.*, **2004**, 39, 130-139.
16. "Tricyanovinyl-Substituted Oligothiophenes". Bader, Mamoun M.; Custelcean, Radu; Ward, Michael D., *Chem. Mat.* **2003**, 15, 616-618.
17. "Third-Order Optical Nonlinearities of α,ω -Dithienylpolyenes and Oligo(thienylvinylene)" Sun, Wenfang; Bader, Mamoun M.; Carvalho, Taiala. *Optics Communications*, **2003**, 215, 185-190.
18. "AC electrical behavior of a novel aromatic electro-optic polyimide". Jawad, S. Abdul; Bader, M. *International Journal of Polymeric Materials*, **2002**, 51, 403-412.
19. "Design, synthesis and electrochemical behavior of some new organic electron acceptors," Bader, M. M.; Carvalho, T.; Moser, J. D.; Li, H.; Tartar, S.; Spangler, C. W. "Linear and Nonlinear Optics of Organic Materials," Editor(s): Eich, Manfred; Kuzyk, Mark G., *Proc. SPIE-The International Society for Optical Engineering*, **2002**, 4461, 304-310.
20. "Photostability of 1-Diphenylamino-4-tricyanoethenylbenzene/Poly (methyl methacrylate) Thin Films," Sisk W.N.; Bader M. M. *Polym. Mat. Sci. Eng.(PMSE)*, **2001**, 84, 1087-1088.
21. "Dielectric Relaxation Spectroscopic Measurements on a Novel Electroactive Polyimide", Jawad, S. A.; Alnajjar, A.; Bader, M. M. *Materials Research Society Proceedings, Electroactive Polymers*, **2000**, Eds., Q. M. Zhang, T. Furukawa, Y. Bar-Cohen, J. Scheinbeim, 600, 311-323.
22. "Theoretical Investigation of The Second and Third Order Nonlinear Optical Properties of Some Fused Heterocyclic Aromatic Compounds", Bader, M. M. *Materials Research Society Proceedings, The Optical Properties of Materials*, **2000**, Eds., J. R. Chelikowsky, S. G. Louie, G. Martinez, R. L. Shirley, 579, 163-167.
23. "Synthesis and Characterization of New Metal-Containing Polymers for Optical Applications", Bader, M. M.; Pham, P. T.; Eds. M. G. Kuzyk, M. Eich, *SPIE-The International Society for Optical Engineering*, **2000**, 3796, 178-18.
24. "Synthesis and Characterization of New Star-Shaped Metal-Containing Polymers for Optical Applications", Bader, M. M.; Pham, P. T.; Moser, J. D. *Materials Research Society Proceedings, The Optical Properties of Materials*, **2000**, Eds., S. P. Ermer, J. R. Reynolds, J. W. Perry, A. K-Y. Jen, Z. Bao, 598, BB11.56.1-11.56.5.
25. " Design and Synthesis of New Acceptor Molecules for Photo-Induced Electron Transfer Reverse Saturable Absorption", Bader, M. M.; Moser, J. D.; Li, H.; Tarter, S.; Spangler, C. *Materials Research Society Proceedings, The Optical Properties of Materials*, **2000**, Eds., S. P. Ermer, J. R. Reynolds, J. W. Perry, A. K-Y. Jen, Z. Bao, 598, BB4.8.1-4.8.7.
26. "Synthesis and Characterization of New Metal-Containing Polymers for Third-Order NLO Applications". Bader,

- M. M.; Pham, P. T.; Molli, A.; Myeres, K.; Moser, J. D. and Albright, L. *Materials Research Society Proceedings, Organic Nonlinear Optical materials and Devices*, **1999**, Eds., B. Kippelen, H.S. Lackritz, R. O. Claus, 561, 93-98.
27. "Nonlinear Optical Characterization of Organic Materials", in *Optical Metrology: A Critical Review*, Bader, M. M., Ed. G. Al-Jumaily, *SPIE-The International Society for Optical Engineering*, **1999**, CR72, 257-276.
 28. "Theoretical Investigation of the Nonlinear Optical Polarizabilities of Some Fused Aromatic Compounds". Bader, M. M. *Proc. SPIE-The International Society for Optical Engineering*, **1998**, 3473, 112-123.
 29. "Dielectric Relaxation Spectroscopic Measurements on Polypyrrole". Bader, M. M.; Abdel-Jawad, S. A. and Al-Najjar, A. *Inter. J. Polymeric Mater.*, **1998**, 39, 21-31.
 30. "Synthesis and Characterization of Terminally Functionalized n-Alkane Thiols". Bader, M. M. *Phosphorous, Sulfur and Silicon*, **1996**, 116, 77-92.
 31. "Nucleation and Growth of Molecular Crystals on Self-Assembled Monolayers", L.M. Frostman, L. M.; Bader, M. M.; Ward, M. D. *Langmuir*, **1994**, 10, 576-582.
 32. "Theoretical Investigation of the Electronic and Geometric and Nonlinear Optical Properties of 8-Hydroxyquinoline Derivatives". Bader, M. M.; Hamada, T. ; and Kakuta, A. *J. Amer. Chem. Soc.*, **1992**, 114, 6475-6479.
 33. "Fused, Three-ring Donor-Acceptor Molecules as Potential Materials for Efficient Second Harmonic Generation". Mclean, M. R.; Bader, M. M.; Dalton, L. R. *Materials Research Society Proceedings, Electrical, Optical and Magnetic Properties of Organic Solid State Materials*, **1990**, eds., L.Y. Chiang; D. Cowan; and P. Chaikin, 173, 563-566.
 34. "The Effect of Matrix Attachment on the Third-Order Nonlinear Optical Properties of Dyes". Polis, D. W.; Bader, M. M.; Dalton, L. R. *Materials Research Society Proceedings, Electrical, Optical and Magnetic Properties of Organic Solid State Materials*, **1990**, eds., L.Y. Chiang; D. Cowan; and P. Chaikin, 173, 551-556.
 35. "New Polymers for Electroactive Applications". Polis, D. W.; Bader, M. M.; Dalton, L. R. *Materials Research Society Proceedings, Electrical, Optical, and Magnetic Properties of Organic Solid State Materials*, **1990**, eds., L.Y. Chiang ; D. Cowan ; and P. Chaikin, 173, 567-71.
 36. "A Photophysical and Structural Study on Dye-Type Organic Molecules with Potentially Useful Nonlinear Optical Properties". Mclean, M.R.; Bader, M. M.; Dalton, L. R. ; Devine, R.S.; Steier, W.H. *J. Phys. Chem.*, **1990**, 94, 4386-87.
 37. "Stabilization of Bipolaronic States in Ladder Polymer Model Systems : Implications for Polymers having Enhanced Nonlinear Optical Properties", Spangler, C. W.; Havelka, K.; Bader, M. M.; McLean, M.R.; Dalton, L. R. *Proc. SPIE-The International Society for Optical Engineering*, **1989**, 1147, 149.

PATENTS

1. "Nonlinear Optical Device Containing Organic Metal Complex". Mamoun Bader; Y. Itoh and A. Kakuta, Japanese Patents, Jpn.Kokai Tokkyo Koho JP 05,173,204; **1993**, [Chem. Abstr. vol.119, 1993, P 213728f.]
2. "Organic Nonlinear Optical Material for Second Harmonic-Generating Waveguide Device". Mamoun M. Bader; T. Hamada H. Kagawa and A. Kakuta, Japanese Patents, Jpn.Kokai Tokkyo Koho JP 05,303,126; **1994**, [Chem. Abstr. vol.121, **1994**, P 95570q.]

CONFERENCE & SCIENTIFIC MEETING PRESENTATIONS

52 conference presentations, most recent presentations (last ten years):

1. PTT Pham, MM Bader, "Solid state structures of oligothiophenes", ACS DENVER MARCH **2015**.
2. PTT Pham, MM Bader, "Undergraduate research in the chemistry curriculum: Best practices", ACS DENVER MARCH **2015**,
3. PTT Pham, MM Bader, Structural Studies on Some Oligothiophenes and Ethylenedioxythiophenes, MRS SAN FRANCISCO APRIL **2015**
4. Dicyanovinyl- and Tricaynovinyl-Oligothiophenes: A Comparative Study, M.M. Bader and P.T. Pham, ACS National Meeting, Dallas, TX March **2014**
5. Phuong Pham, Mamoun M. Bader , "Evolution of organic chemistry textbooks: A comparative

study of contents and organization over the past 20 years”, 244th ACS National Meeting, Philadelphia, PA, United States, August 19-23, **2012**, CHED-70.

6. “Photophysics of Oligothiophenes”, Phuong Pham, Mamoun M. Bader, W. Sun, Wenjin and A. Nazzal, Materials Research Society 2011 Fall Meeting. Nov.27th-Dec. 1st, **2011**, Boston, MA,
7. “Structural studies on Brominated Oligothiophenes”, Phuong Pham, Mamoun M. Bader, Materials Research Society **2011** Fall Meeting. Nov.27th-Dec. 1st, 2011, Boston, MA
8. “Comparative DFT and X-ray structural study on some organic semiconductors”, Bader, M. M.; Pham, P. T. Poster presentation, Pacific Chem 2010, Honolulu, HI Dec. 15-20, **2010**.
9. ” Structural Studies on Oligomers for Semiconductor Applications”, Bader, M. M.; Pham, P. T. Oral presentation, Polymer Processing Society 2010 Meeting, Istanbul, Turkey, October 19-24, **2010**.

COLLABORATIONS

Professor C. Daniel Frisbie, Department of Chemical Engineering and Materials Science, University of Minnesota. *Organic Semiconductors, Molecular wires and Solar Cells*.

Professor Michael D. Ward, Molecular Design Institute and the Chemistry Department, New York University. *Crystal Growth and Design of functional Materials*.

Professor P. T. Pham, Pennsylvania State University, Worthington-Scranton. *Density Functional Theory, Synthesis and Electrochemistry of Organic Materials for Optical and Electronics Applications; Crystal Growth of Biologically active molecules*.

Professor Mariam Ali Al Maadeed, Department of Physics and Materials Technology Unit, Qatar University, Doha, Qatar. *Biopolymers Physics and Chemistry*.

Professor W. Sun, Department of Chemistry, North Dakota State University. *Optical Characterization and Photo physics of Organic Nonlinear Optical Materials*.

Professor Rahmalan Ahmad and Dr. Nor Azah, University of Technology Malaysia. *Bio- and Chemical Sensors using Self-assembly principles*.

Professor Mukhles Swwan, Head of the Nanotechnology Laboratory, Al Quds University, Abu Dis, The West Bank. *Nanomaterials Chemistry and Physics*.

Professor Amjad Nazzal, Department of Physics and Electrical Engineering, Wilkes University, Wilkes Barre, PA. *Synthesis, Photo- and electrical properties of nano materials*.

VISITING PROFESSORSHIPS

1. *New York University, New York City, summer **2011***.
2. *University of Technology Malaysia, Johor Bahru, Malaysia, June- August **2010***
3. *University of Technology Malaysia, Ibnu Sina Institute for Fundamental Sciences, Johor Bahru, Malaysia, Jan. **2010***.
4. *Al Quds University, Nano Technology Lab, Dec. **2009***.
5. *University of Minnesota, Department of Chemical Engineering and Materials Science, Minneapolis, Minnesota summers **2001-2004, 2006-2009***.
6. *Qatar University, Doha, Qatar: sabbatical leave **2006-2007***.
7. *Montana State University, Bozeman, Montana, summer **1999***.
8. *University of Southern California, Los Angeles, California, summer **1996***.

SERVICE ACTIVITIES:

- Research Experience for high school teachers and students, University of Minnesota summers 2001-2010, NSF funded project
- Pennsylvania Junior Academy of Science, judge and mentor
- Nittany Speaker, visiting elementary, middle and high school students to motivate them into career in science engineering
- Organic chemistry group for the University College Chemistry faculty members, Coordinator,
- Organizing committee for the 2012 Biennial National Conference on Chemical Education. Member.
- Commission on Racial and Ethnic Diversity CORED at Penn State University, Member, 2009-14
- Northeast Pennsylvania Diversity Education Consortium (NEPDEC). Member
- Campus' promotion and tenure committee. Member, 2009-present.
- Science and Engineering Club. *Founder and academic advisor.*
- Research committee. Chair of the research committee (1998-2002); Member, 1997- present.
- Lecture committee. Member, 1997-present.
- Honors Program. Faculty advisor and member, 1998-present.
- First Year Experience (FYE) team. Member, 2003-present.
- Strategic Planning Committee. Member, 2004-2010, Chair, 2005-2006.
- Search Committee for Tenure Track Business Faculty. Member, 2007-2008.
- Assistant Director of Academic Affairs Search Committee. Member, Spring 2011.
- Mathematics Faculty Search Committee. Member, Spring 2011.
- Diversity Committee. Member, 2007-2008.
- Faculty & Staff Campaign Committee. Member, 2009-present.
- Maintenance and Upgrading of the Teaching Laboratories.
- Recruiting students.
- Learning Center.
- Inclusion of Research Skills in Teaching Using E-Library
- Out of classroom support in Math and English for chemistry students.
- Recruiting and evaluating part time chemistry faculty
- Evaluating transfer credits for chemistry courses.

PROFESSIONAL SERVICE

1. *Served on a panel for the CAREER Awards in the Division of Materials Research, National Science Foundation, October 30-Nov. 1, 2008.*
2. *Member of the organizing committee of the 2nd Qatar Symposium for Science teaching and learning, while on sabbatical leave, spring 2007.*
3. *Reviewer of Proposals for the National Science Foundation (NSF), latest proposal reviewed was in January 2011.*
4. *Served as a reviewer for the following Journals:*
 - Journal of the American Chemical Society;
 - Chemistry of Materials;
 - Macromolecules;
 - Journal of Physical Chemistry.
 - Advanced Functional Materials
5. *Served as a technical reviewer for the Smith Symposium held at Penn State York November 2008.*

COMMUNITY SERVICE

1. **Board of Directors, Diversity Institute at Misericordia University.** Member 2005-present.
2. **Luzerne County Diversity Commission.** Member, 2007-present.

3. **Girl Scouts science camp trainer**

OTHER ACTIVITIES:

1. Citations of my work have been steadily increasing 280 by leaders in the areas of organic materials and in top ranked society journals and handbooks of organic and nano functional materials.
2. Supervising teams of students who are competing in NSF sponsored program on using You Tube clips for teaching scientific concepts (ongoing projects).
3. I am currently working on few manuscripts and 2 books while still pursuing my research