

Prof. Metin Aydın

Personal Information

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International Researcher IDs

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Biography

Dr. Aydın received his B.S degree in 1989, M.S degree in engineering physics in 1993 from Ankara University and holds a doctorate in physical chemistry from the City University of New York (CUNY), received in 2001. His mentor at The City College of The City University of New York was Dr. John R. Lombardi. From 2001 to 2005, Dr. Aydın was a post-doctoral associate at Center for Analysis of Structures and Interfaces (CASI), The City College, Chemistry Department, at CUNY, under the guidance of Dr. Daniel L. Akins, director. In 2008, Dr. Aydın joined the faculty of the Chemistry Department of Ondokuz Mayıs University (OMU), where he rose through the ranks from assistant professor to associate professor of physical chemistry. Dr. Aydın has been published in numerous professional journals. He has extensively lectured at conferences and universities, both national and international. His main research interests involve Photofragmentation Spectroscopy of Transition Metal Cation Clusters in a Reflectron Time-Of-Flight (TOF) Mass Spectrometer, Surface Enhanced Raman Spectroscopy (SERS), Aggregation Enhanced Raman Spectroscopy (AERS), Time-Dependent Density Functional (TDF) theory, single crystal X-ray diffraction, and chemistry and physics of isolated and functionalized carbon nanotubes and boron nitride nanotubes.

Education Information

Doctorate, Graduate School and University Center of the City University of New York, United States Of America 1994 - 2001

Postgraduate, Ankara University, Fen Bilimleri Enstitüsü, Fizik Mühendisliği (YI) (Tezli), Turkey 1990 - 1993

Undergraduate, Ankara University, Mühendislik Fakültesi, Fizik Mühendisliği Bölümü, Turkey 1985 - 1989

Dissertations

Doctorate, Photofragmentation Spectroscopy of the Zirconium and Niobium Cluster Cations and Ab Initio Studies, City University Of New York Graduate Center, Chemistry, 2001

Postgraduate, N,N'-bis-disalisinden 1,2 diaminobenzen ($C_2H_6N_2O_2$)'xxnin kristal ve moleküler yapısı, Ankara University, Fen Bilimleri Enstitüsü, Fizik Mühendisliği (YI) (Tezli), 1993

Research Areas

Chemistry, Natural Sciences

Academic Titles / Tasks

Professor, Ondokuz Mayıs University, Fen Fakültesi, Kimya Bölümü, 2017 - Continues

Associate Professor, Ondokuz Mayıs University, Fen Fakültesi, Kimya Bölümü, 2010 - 2016

Assistant Professor, Ondokuz Mayıs University, Fen Fakültesi, Kimya Bölümü, 2008 - 2010

Courses

Fotokimya, Undergraduate, 2016 - 2017, 2015 - 2016, 2013 - 2014

IR and Raman Spectroscopy, Doctorate, 2016 - 2017

Hesaplamalı Kimya, Undergraduate, 2016 - 2017, 2013 - 2014, 2011 - 2012

Çekirdek Kimyası, Undergraduate, 2016 - 2017, 2015 - 2016, 2013 - 2014, 2012 - 2013

Quantum Mechanics And Applications, Postgraduate, 2016 - 2017

Genel Kimya I, Undergraduate, 2016 - 2017

Fizikokimya Lab. I, Undergraduate, 2016 - 2017

KUANTUM KİMYASINA GİRİŞ, Undergraduate, 2015 - 2016, 2014 - 2015, 2012 - 2013, 2011 - 2012

Kuantum Mekanikliği ve Uygulamaları, Postgraduate, 2015 - 2016

Termokimya, Undergraduate, 2015 - 2016, 2013 - 2014

Kuantum Kimyası , Postgraduate, 2014 - 2015

Nanotechnology I, Postgraduate, 2014 - 2015

Laboratuvar Güvenliği, Undergraduate, 2013 - 2014

Kimya, Undergraduate, 2012 - 2013

KOLLOİT KİMYASI, Undergraduate, 2012 - 2013

Polimer Kimyasına Giriş, Undergraduate, 2012 - 2013, 2011 - 2012

Fizikokimya, Undergraduate, 2011 - 2012, 2010 - 2011, 2008 - 2009

Published journal articles indexed by SCI, SSCI, and AHCI

- I. **DFT studies on solvent dependence of electronic absorption spectra of free-base and protonated porphyrin**
Aydın M., Akins D. L.
COMPUTATIONAL AND THEORETICAL CHEMISTRY, vol.1132, pp.12-22, 2018 (SCI-Expanded)
- II. **Improved Pt/C electrocatalysts for methanol oxidation prepared by different reducing agents and surfactants and DFT studies on it**
Cokangin A., Aydın M., Gökağaç Arslan G.
JOURNAL OF NANOPARTICLE RESEARCH, vol.19, no.10, 2017 (SCI-Expanded)
- III. **Comparative Study of the Structural and Vibroelectronic Properties of Porphyrin and Its Derivatives**
Aydın M.
MOLECULES, vol.19, no.12, pp.20988-21021, 2014 (SCI-Expanded)
- IV. **Dependence of Geometric and Spectroscopic Properties of Double-walled Boron Nitride Nanotubes on Interwall Distance**
Aydın M.
NANOMATERIALS AND NANOTECHNOLOGY, vol.4, 2014 (SCI-Expanded)
- V. **DFT and Raman spectroscopy of porphyrin derivatives: Tetraphenylporphine (TPP)**
Aydın M.
VIBRATIONAL SPECTROSCOPY, vol.68, pp.141-152, 2013 (SCI-Expanded)
- VI. **Vibrational and electronic properties of single-walled and double-walled boron nitride nanotubes**
Aydın M.
VIBRATIONAL SPECTROSCOPY, vol.66, pp.30-42, 2013 (SCI-Expanded)

- VII. **Density functional theory studies on covalent functionalization of single-walled carbon nanotubes with benzenesulfonic acid**
Aydin M.
VIBRATIONAL SPECTROSCOPY, vol.65, pp.84-93, 2013 (SCI-Expanded)
- VIII. **Density functional theory and Raman spectroscopy applied to structure and vibrational mode analysis of 1,1',3,3'-tetraethyl-5,5',6,6'-tetrachloro-benzimidazolocarbocyanine iodide and its aggregate**
Aydin M., Dede O., Akins D. L.
JOURNAL OF CHEMICAL PHYSICS, vol.134, no.6, 2011 (SCI-Expanded)
- IX. **Geometric and Spectroscopic Properties of Carbon Nanotubes and Boron Nitride Nanotubes**
Aydin M., Akins D. L.
ELECTRONIC PROPERTIES OF CARBON NANOTUBES, pp.157-210, 2011 (SCI-Expanded)
- X. **Calculated dependence of vibrational band frequencies of single-walled and double-walled carbon nanotubes on diameter**
Aydin M., Akins D. L.
VIBRATIONAL SPECTROSCOPY, vol.53, no.1, pp.163-172, 2010 (SCI-Expanded)
- XI. **Surface-enhanced Raman spectroscopy of indanthrone and flavanthrone**
Chang J., Canameres M. V., Aydin M., Vetter W., Schreiner M., Xu W., Lombardi J. R.
JOURNAL OF RAMAN SPECTROSCOPY, vol.40, no.11, pp.1557-1563, 2009 (SCI-Expanded)
- XII. **Resonant Multiphoton Fragmentation Spectrum of Niobium Dimer Cation**
Aydin M., Lombardi J. R.
JOURNAL OF PHYSICAL CHEMISTRY A, vol.113, no.12, pp.2809-2820, 2009 (SCI-Expanded)
- XIII. **Density functional theory applied to structure and vibrational band analysis of an aggregated thiocarbocyanine**
Aydin M., Jean-Mary F., Stevens N., Akins D. L.
Journal of Physical Chemistry B, vol.108, no.28, pp.9695-9702, 2004 (SCI-Expanded)
- XIV. **Multiphoton fragmentation spectra of zirconium and niobium cluster cations**
Aydin M., Lombardi J. R.
International Journal of Mass Spectrometry, vol.235, no.1, pp.91-96, 2004 (SCI-Expanded)
- XV. **Aggregation of thionine within AIMCM-48**
Xu W., Aydin M., Zakia S., Akins D. L.
Journal of Physical Chemistry B, vol.108, no.18, pp.5588-5593, 2004 (SCI-Expanded)
- XVI. **Spectroscopy and dynamics of DCM encapsulated in MCM-41 and Y zeolite mesoporous materials**
Guo H., Zhang X., Aydin M., Xu W., Zhu H., Akins D. L.
Journal of Molecular Structure, vol.689, no.1-2, pp.153-158, 2004 (SCI-Expanded)

Articles Published in Other Journals

- I. **Density functional theory used in structure determinations and Raman band assignments for pseudoisocyanine and its aggregate**
Guo C., Aydin M., Zhu H., Akins D. L.
Journal of Physical Chemistry B, vol.106, no.21, pp.5447-5454, 2002 (Scopus)
- II. **Molecular Structure of N N bis disalicylidene 1 2 diaminobenzene and bis N N p chloro salicylidene 1 2 diaminobenzene**
AYDIN M., TARIMCI Ç.
TURKISH JOURNAL OF PHYSICS, vol.20, no.2, pp.153-161, 1996 (Scopus)
- III. **Crystal structure of bis-N,N'-p-chlorosalicylideneamine-1,2-diaminobenzene**
Elerman Y., ELMALI A., KABAK M., Aydin M., Peder M.
Journal of Chemical Crystallography, vol.24, no.9, pp.603-606, 1994 (Scopus)

Books & Book Chapters

- I. **Boron, Boron Compounds and Boron-Based Materials and Structures**
Aydın M. (Editor)
IntechOpen, London, 2024
- II. **Density Functional Theory Study of the Solvent Effects on Electronic Transition Energies of Porphyrins**
AYDIN M.
in: Density Functional Theory - Recent Advances, New Perspectives and Applications, Daniel Glossman-Mitnik, Editor, IntechOpen, London, pp.1-17, 2022
- III. **Recent Advances in Boron-Containing Materials**
Aydın M. (Editor)
IntechOpen, London, 2020
- IV. **Infrared and Raman Spectroscopic Characterization of Porphyrin and Its Derivatives**
Aydın M., Akins D. L.
in: Applications of Molecular Spectroscopy to Current Research in the Chemical and Biological Sciences, Mark T Stauffer, Editor, IntechOpen, London, pp.141-162, 2016
- V. **The Geometric and Electronic Properties of Porphyrin and Its Derivatives**
AYDIN M., AKINS D. L.
in: Applications of Molecular Spectroscopy to Current Research in the Chemical and Biological Sciences, Mark T Stauffer, Editor, InTech, pp.207-231, 2016
- VI. **Physical and Chemical Properties of Boron Nitride Nanotubes**
Aydın M.
Verlag, LAP Lambert Academic Publishing, London, 2015
- VII. **Vibronic Properties of Functionalized Single- Walled Carbon Nanotubes and Double-walled Boron Nitride Nanotubes**
Aydın M., Akins D. L.
in: Physical and Chemical Properties of Carbon Nanotubes, Suzuki Satoru, Editor, IntechOpen, London, pp.53-95, 2013
- VIII. **Geometric and Spectroscopic Properties of Carbon Nanotubes and Boron Nitride Nanotubes**
Aydın M., Akins D.
in: Electronic Properties of Carbon Nanotubes, Jose Mauricio Marulanda, Editor, INTECHOPEN, London, pp.157-210, 2011
- IX. **PHOTOFRAGMENTATION SPECTROSCOPY**
Aydın M.
VDM Verlag, Saarbrücken, 2009

Refereed Congress / Symposium Publications in Proceedings

- I. **Methanol oxidation by nano-Pt/C electrocatalysts and DFT studies**
GÖKAĞAÇ ARSLAN G., AYDIN M., ÇOKANGIN A.
6th EuCheMS Chemistry Congress, 9 - 15 September 2016
- II. **Laser Spectroscopy and Density Functional Study on Niobium Dimer Cation**
AYDIN M., Lombardi J. R.
64th OHIO State University International Symposium on Molecular Spectroscopy, Ohio, United States Of America, 22 - 26 June 2009
- III. **Calculated Dependence of Vibrational band frequencies of Single Walled Carbon Nanotubes on Diameter**
AYDIN M., Daniel L. A.
64th OHIO State University International Symposium on Molecular Spectroscopy, Ohio, United States Of America,

22 - 26 June 2009

- IV. **Spectroscopic and dynamics studies of DCM encapsulated in mesoporous materials MCM-41 and Y zeolite.**
Guo H., Zhang X., Aydın M., Xu W., Daniel L. A.
226th National Meeting of the American-Chemical-Society, New York, United States Of America, 7 - 11 September 2003
- V. **Molecular Modeling and Quantum Chemical Calculations**
AYDIN M.
IGERT Retreat and Scientific Conference, United States Of America, 1 - 04 June 2003
- VI. **Photofragmentation Spectroscopy of Niobium Cation Clusters in a Reflectron Time Of Flight TOF Mass Spectrometer and Density Functional Calculation on Niobium Cations Clusters**
AYDIN M., Lindsay D. M., Lombardi J.
55. OHIO State University International Symposium on Molecular Spectroscopy, United States Of America, 12 - 16 June 2000
- VII. **Photofragmentation Spectroscopy of Zirconium and Niobium Clusters in a Reflectron Time Of Flight TOF Mass Spectrometer and Density functional calculation on Zirconium and Niobium Dimer Cations**
AYDIN M., Wang W. M., Deosaran S. B., Lombardi J., Lindsay D. M.
54. OHIO State University International Symposium on Molecular Spectroscopy, United States Of America, 14 - 18 June 1999
- VIII. **Photofragmentation Spectroscopy of Carbon and Niobium Clusters in a Reflectron Time Of Flight TOF Mass Spectrometer**
AYDIN M., Wang W. M., Deosaran S. B., Lombardi J. R., Lindsay D. M.
53. OHIO State University International Symposium on Molecular Spectroscopy, United States Of America, 15 - 19 June 1998
- IX. **Photofragmentation Spectroscopy of Niobium Cation Clusters in a Reflectron Time Of Flight TOF Mass Spectrometer**
Eaton J. G., Deosaran S. B., Wang W. M., AYDIN M., Lombardi J. R., Lindsay D. M.
The Formation and Properties of Solid Surfaces, Interfaces and Thin Films, New York, United States Of America, 29 September 1995
- X. **Bazı Dört Dişli Schiff Bazlarının Kristal Yapısı ve Moleküler Orbital Hesaplamaları**
AYDIN M., Tarımcı Ç.
Ulusal Fizik Kongresi, Cyprus (Kkct), 25 - 27 October 1993

Scholarships

Postdoctoral Scholarship, University, 2001 - 2005

PhD Fellowship, University, 1994 - 2001