Doç. Dr. Mehmet Fatih Danışman Date of birth: 09.02.1978

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Education

2005 **PhD, Chemistry, Princeton University, Princeton, NJ, USA**

Title: Surface diffraction studies of organic thin films

Advisor: Prof. Giacinto Scoles

2000 **MS, Chemistry, Middle East Technical University, Ankara, Turkey**

Title: Theoretical study of unimolecular rearrangement reactions of 1,2-divinylcyclopropane and 1-cyclopropyl-1,3-butadiene

Advisors: Prof. İlker Özkan, Assoc. Prof. Metin Zora

1999 **BS, Chemistry, Middle East Technical University, Ankara, Turkey**

Professional Experience

2014- **Assoc. Prof. Dr., title awarded by METU**

2011- **Assoc. Prof. Dr., title awarded by UAK**

2008-2014 **Assist. Prof. Dr., Chemistry, Middle East Technical University, Ankara, Turkey**

2006-2008 **Lecturer, Chemistry, Middle East Technical University, Ankara, Turkey**

2005-2006 **Postdoctoral Fellow, The Pennsylvania State University, University Park, PA, USA;**

***Advisors:* David L. Allara and John V. Badding**

- Research on formation and characterization of octadecyltrichlorosilane (OTS) thin films on flat silica surfaces and silica capillaries.

2002-2005 **Graduate Research Assistant, Princeton University, Princeton, NJ, USA;**

***Advisor:* Giacinto Scoles**

- Research on low energy atom diffraction (LEAD), X-ray Diffraction and X-ray photoelectron diffraction studies of methanethiol self assembled monolayers (SAMs).
- Research on growth properties pentacene thin films grown by supersonic molecular beam deposition.

2001-2002 **Graduate Teaching Assistant, Princeton University, Princeton, NJ, USA;**

***Advisor:* Giacinto Scoles**

1999-2000 **Graduate Teaching Assistant, Middle East Technical University, Ankara, Turkey;**

***Advisors:* İlker Özkan and Metin Zora**

Administrative duties

2010-2012: ***Assistant chair***, Middle East Technical University, Department of Chemistry

2010-2015: ***Academic advisor***, Middle East Technical University, Chemistry Club

2010-2013: ***Committee member***, International Science Olympiads, Turkish Chemistry Group

2013-2014: ***Vice-chair***, International Science Olympiads, Turkish Chemistry Group

Scientific Duties

- ***Scientific committee member,*** 3rd Computational Chemistry Congress, 12-14 October 2017, Ankara, Türkiye
- ***Organizing committee member,*** 29th National Chemistry Congress, 10-14 September 2017, Middle East Technical University Campus, Ankara, Türkiye.
- ***Local organizing committee member***, 13th European Confrence on Applications of Surface and Interface Analysis (ECASIA'09), October 18-23 ***2009***, Antalya, Türkiye.
- ***Referee***, Turkish Journal of Chemistry, Surface and Coatings Technology, Nanoscale, Journal of Physical Chemistry C, Applied Surface Science, Surface Review and Letters, Beilstein Journal of Nanotechnology, Analytical Chemistry

Awards

2018: The Science Academy's Young Scientist Awards Program (BAGEP) award

2017: METU Prof. Mustafa N. Parlar Foundation, Research Incentive award

2015: METU Peformance Award

2013: Turkish Academy of Sciences-The Young Scientists Award Program (TUBA-GEBIP) award

2000-2006: Higher Education Board of Turkey Scholarship

1999: Third in the graduating class, Middle East Technical University, Department of Chemistry

Research Interests

- Low energy atom diffraction (LEAD), X-ray Diffraction, X-ray photoelectron diffraction, scanning probe microscopy and quartz crystal microbalance studies of self-assembled monolayers (SAMs) and organic semiconductor thin films.
- Supersonic molecular beam deposition of organic semiconductors for fabrication of organic electronic devices.
- Computational studies of the above mentioned systems by means of quantum chemistry methods.
- Cavity-ring down spectroscopy, fiber optics based trace chemical sensors.
- Development of methods and tools for introducing mathematical and quantum chemical concepts to undergraduate students.

Projects

- Completed projects:

  Primary Investigator, Characterization and optimization of pentacene thin films, grown by supersonic molecular beam deposition on Ag(111) and Au(111) surfaces, by helium atom diffraction and quartz crystal microbalance techniques, TÜBİTAK-1001, Project number:107T408, 2007-2011.

Primary Investigator, Investigation of Pentacene Thin Film Phases On Ag(11) Surfaces as a Function of Film Coverage, BAP-2007-R-08-11-00-01, 2007.

Primary Investigator, Study of asymmetric disulfide self-assembled monolayers as possible bottom-up templating agents, TÜBİTAK-CNR-2504, Project number: 209T084, 2010-2013

Researcher, Luminescence Properties of Various Metal Ion Doped Borate Compounds and Investigation of Carboranethiol Films on Metal Surfaces, TÜBİTAK-1003, Project number: 213M182, 2014-2016

Primary Investigator, Development of a Fiber Loop Cavity Ringdown Spectroscopy System for Trace Detection, TÜBİTAK-2515 (COST-TD 1105), Project number: 212T079, 2013-2016

Primary Investigator, Investigation of perfluoropentacene films on flat and vicinal Ag(111) and Au(111) surfaces, TÜBİTAK-1001 (COST-TN 1301), Project number: 113F022, 2013-2017

- Projects in progress:

Advisor, Design of Surface Passivation Techniques for PbTe Quantum Dots and Application to Singlet Fission Sensitised Photovoltaic Devices, TÜBİTAK-1001, Project number: 115F187, 2015-2017

Researcher, A van der Waals DFT Investigation of Self-Assembled Monolayer Structures of Functionalized Thiol Derivatives on Au(111) and Graphene, TÜBİTAK-1001, Project number: 116F174, approved (waiting for project contract)

Thesis Supervised

2010: M.S., İlker Demiroğlu, January 2010, "Ab-Initio studies of pentacene on Ag(111) surfaces" (Co-advisor: Şinasi Ellialtıoğlu, METU, Physics Department)

2010: M.S., Berrin Özkan, July 2010, "Growth of Gold Films on Quartz Surfaces for Quartz Crystal Microbalance Application"

2012: Ph.D., Erol Albayrak, October 2012, "Investigation of Some Self-Assembled Monolayers with Helium Diffraction Method" (Advisor: Sıtkı Duman, Sakarya University, Physics Department; Co-advisor: M. F. Danışman)

2013: M.S., Betül Cengiz, February 2013,"Fiber Loop Ring Down Spectroscopy for Trace Chemical Detection" (Co-advisor: Okan Esentürk, METU, Chemistry Department)

2016: M.S., Gülden Güney, February 2016, "Investigation of Carboranethiol-Metal Surface Interactions Including Long-Range Correlation" (Advisor: Ersen Mete, Balıkesir University, Physics Department; Co-advisor: M. F. Danışman)

2017: M.S., Nima Sohrabnia, February 2017, "Mixed Carboranethiol Self-Assembled Monolayers on Gold Surfaces" (Co-advisor: Ayşen Yılmaz, METU, Chemistry Department)

2017: M.S., Alim Yolalmaz, July 2017, "Utilization of Fiber Loop Ring Down Technique for Sensing Applications" (Co-advisors: Okan Esentürk, METU, Chemistry Department; Alpan Bek, METU, Physics Department), METU Thesis of the Year Award

Thesis in progress:

Ph.D., Adem Yavuz "Development of a Helium Diffraction Setup for characterization of perfluorpentacene thin films on metal surfaces"

Teaching Experience

- **International Chemistry Olympiads:** Lecturer, Physical Chemistry Group, (2008-2013)
- **Courses Taught at Middle East Technical University:** General Chemistry (Chem 111, Chem 112, Chem 107), Mathematics for Chemists (Chem 257), Quantum Chemistry (350), Physics and Chemistry of Surfaces and Organic Thin Films (Chem 485), Use of Computers in Chemistry (493), Advanced Physical Chemistry (Chem 597), Physical Chemistry of Interfaces (Chem 548), Characterization Techniques at the Nanoscale (MNT 502, scanning probe microscopy part).

Publications

Articles published in refereed journals (ISI - total citations: 703, h-index:9) (Google academic - total citations: 906, h-index:10)

1. E. Mete, M. Yortanlı, **M. F. Danışman** "A van der Waals DFT study of chain length dependence of alkanethiol adsorption on Au(111): Physisorption vs.chemisorption" Phys. Chem. Chem. Phys. 19, 13756 (2017)
2. A. Yavuz, N. Sohrabnia, A. Yılmaz, M. F. Danışman "Mixed carboranethiol self-assembled monolayers on gold surfaces" Appl. Surf. Sci. 413, 233 (2017
3. A. Yolalmaz, F. Hanifehpour Sadroud, M. F. Danışman, O. Esentürk "Intracavity gas detection with fiber loop ring down spectroscopy" Opt. Comm. 396, 141 (2017).
4. E. Albayrak, Ş. Karabuğa, G. Bracco, **M.F. Danışman** **"**Study of the helium cross-section of unsymmetric disulfide self-assembled monolayers on Au(111)" Appl. Surf. Sci. 390, 283 (2016).
5. E. Mete, A. Yılmaz, **M. F. Danışman** "A van der Waals Density Functional Investigation of Carboranethiol Self-Assembled Monolayer on Au(111)" Phys. Chem. Chem. Phys. 18, 12920 (2016).
6. E. Mete, **M. F. Danışman** "Dispersion Corrected DFT Study of Pentacene Thin Films on Flat and Vicinal Au(111) Surfaces" J. Phys. Chem. C 119, 3596 (2015).
7. E. Albayrak, Ş. Karabuğa, G. Bracco, **M.F. Danışman "**Investigation of the deposition and thermal behavior of striped phases of unsymmetric disulfide self-assembled monolayers on Au(111): The case of 11-hydroxyundecyl decyl disulfide**"** J. Chem. Phys. 142, 014703 (2015).
8. E. Albayrak, Ş. Karabuğa, G. Bracco, **M.F. Danışman "**11-hydroxyundecyl octadecyl disulfide Self-Assembled Monolayers on Au(111)" Appl. Surf. Sci. 311, 643 (2014).
9. E. Albayrak, **M.F. Danışman** "Helium diffraction study of pentacene films on Au(111)" Appl. Surf. Sci. 295, 54 (2014).
10. E. Albayrak, **M.F. Danışman**, "Helium Diffraction Study of Low Coverage Phases of Mercaptoundecanol and Octadecanethiol Self-Assembled Monolayers on Au(111) Prepared by Supersonic Molecular Beam Deposition" J. Phys. Chem. C 117, 9801 (2013).
11. E. Albayrak, S. Duman, G. Bracco, **M.F. Danışman**, "Helium atom diffraction study of low coverage phases of decanethiol self-assembled monolayers prepared by supersonic molecular beam deposition" Appl. Surf. Sci. 268, 98 (2013).
12. E. Mete, İ. Demiroğlu, E. Albayrak, G. Bracco, Ş. Ellialtıoğlu, **M.F. Danışman**, "Influence of Steps on the Tilting and Adsorption Dynamics of Ordered Pentacene Films on Vicinal Ag(111) Surfaces" J. Phys. Chem. C 116, 19429 (2012).
13. **M. F. Danışman** and B. Özkan, "Simultaneous detection of surface coverage and structure of krypton films on gold by helium atom diffraction and quartz crystal microbalance techniques" Rev. Sci. Instrum. 82, 115104 (2011).

14. E. Mete, İ. Demiroğlu, **M. F. Danışman**, Ş. Ellialtıoğlu, "Pentacene Multilayers on Ag(111) Surface" J. Phys. Chem. C 114, 2724 (2010).
15. **M. F. Danışman**, J. A. Calkins, Pier J.A. Sazio, D. L. Allara, and J. V. Badding "Organosilane Self Assembled Monolayer Growth from Supercritical Carbon Dioxide in Microstructured Optical Fiber Capillary Arrays" Langmuir 24, 3636 (2008).
16. M. Pedio, B. Doyle, N. Mahne, A. Giglia, F. Borgatti, S. Nannarone, S.K.M. Henze, R. Temirov, F.S. Tautz, L. Casalis, R. Hudej, **M. F. Danışman**, B. Nickel, "Growth of pentacene on Ag(1 1 1) surface: A NEXAFS study" Appl. Surf. Sci. 254, 103 (2007).
17. R. Mazzarello, A. Cossaro, A. Verdini, R. Rousseau, L. Casalis, **M. F. Danışman**, L. Floreano, S. Scandolo, A. Morgante, and G. Scoles, "Structure of aCH3S Monolayer onAu(111) Solved by the Interplay between Molecular Dynamics Calculations and Diffraction Measurements", Phys. Rev. Lett. 98, 016102 (2007).
18. **M. F. Danışman**, L. Casalis, G. Scoles, "Supersonic molecular beam deposition of pentacene thin films on two Ag(111) crystals with different step densities", Phys. Rev. B 72, 085404 (2005).
19. L. Casalis, **M. F. Danışman**, B. Nickel, G. Bracco, T. Toccoli, S. Ionotta, G. Scoles, "Hyperthermal molecular beam deposition of highly ordered organic thin films", Phys. Rev. Lett. 90, 206101 (2003).
20. M. Zora, I. Ozkan, **M. F. Danışman**, "Transition structures and energetics for the Cope rearrangement of cis-1,2-divinylcyclopropane: an ab initio study", Theochem 636, 9 (2003).
21. E. L. Hanson, J. Schwartz, B. Nickel, N. Koch, **M. F. Danışman**, "Bonding self-assembled, compact organophosphate monolayers to the native oxide surface of silicon", J. Am. Chem. Soc. 125, 16074 (2003).
22. **M. F. Danışman**, L. Casalis, G. Bracco, G. Scoles, "Structural investigation of monolayers prepared by deposition of (CH3S)2 on the (111) face of single-crystal gold", J. Phys.Chem. B 106, 11771 (2002).

Invited Talks

1. "Helium atom diffraction studies of pentacene thin films", Department of Chemistry, University of Pennsylvania, Philadelphia, PA, April 2005
2. "Helium atom diffraction studies of pentacene thin films". Department of Chemistry, Pennsylvania State University, University Park, PA, May 2005
3. "Supersonic molecular beam deposition of pentacene thin films on two Ag(111) crystals with different step densities", Department of Chemistry, Bilkent University, Ankara, November 2006
4. "Organic molecular thin films: characterization and applications" METU, Physics Department, May 2008
5. "Organic molecular thin films: characterization and applications" UNAM, Ankara, October 2009
6. "Organik moleküler ince filmler: karakterizasyon ve uygulamalar" Department of Chemistry, Gazi University, Ankara, April 2010
7. "Organic molecular thin films: characterization and applications" Department of Chemistry, Boğaziçi University, İstanbul, November 2011
8. "Organic molecular thin films: characterization and applications" TOBB-ETU, Ankara, February 2012
9. "Growth and Characterization of Organic (Molecular) Thin Films" Optoelectronics Research Center, University of Southampton, UK, May 2013

Presentations

1. **M. F. Danışman**, Loredana Casalis, Gianangelo Bracco, Giacinto Scoles, "Structural Investigation of CH3S adsorbed on Au(111)", American Chemical Society National Meeting, April 2002
2. **M. F. Danışman**, Loredana Casalis, Bert Nickel, Giacinto Scoles, "Structural Characterization of Pentacene Ultra-Thin Films on Ag(111) Produced by a Seeded Supersonic Beam Source", Gordon Research Conference on Electronic Processes in Organic Materials, July 2002
3. **M. F. Danışman**, Loredana Casalis, Gianangelo Bracco, Giacinto Scoles, "Structural Investigation of Monolayers Prepared by Deposition of (CH3S)2 on the (111) Face of Single-Crystal Gold", American Physical Society National Meeting, March 2003
4. **M. F. Danışman**, Loredana Casalis, Giacinto Scoles, "Helium Atom Diffraction Study of Ultra Thin Film Phases of Pentacene on Ag(111) Prepared by Hyperthermal Deposition", Gordon Research Conference on Dynamics at Surfaces, August 2003
5. **M. F. Danışman**, Loredana Casalis, Bert Nickel, Giacinto Scoles, "Supersonic Molecular Beam Deposition of Pentacene Thin Films on Two Ag(111) Crystals With Different Step Densities", 11th Workshop on Surface Dynamics, November 2003
6. **M. F. Danışman**, Loredana Casalis, Bert Nickel, Giacinto Scoles, "Supersonic Molecular Beam Deposition of Pentacene Thin Films on Two Ag(111) Crystals With Different Step Densities", American Physical Society National Meeting, March 2004
7. **M. F. Danışman**, Jacob Calkins, John Badding, David L. Allara, "Octadecyltrichlorosilane (OTS) Thin Film Formation in Micro Silica Capillaries for Sensor Applications" NanoTR-III, Ankara, 2007.
8. **M. F. Danışman,** Ersen Mete, İlker Demiroğlu, Şinasi Ellialtıoğlu "A Computational Study of Pentacene Thin Films on Ag(111) Surface" 13th European Confrence on Applications of Surface and Interface Analysis (ECASIA'09), Antalya, October 2009
9. **M. F. Danışman,** Ersen Mete, Şinasi Ellialtıoğlu, "Structural Investigation of Pentacene on Ag(111) by Density Functional Theory" American Physical Society National Meeting, March 2009
10. **M. F. Danışman,** Giacinto Scoles, "Simultaneous Detection of Surface Coverage by Helium Atom Diffraction and Quartz Crystal Microbalance Techniques" American Chemical Society National Meeting, March 2009
11. **M. F. Danışman**, Ersen Mete, Berrin Özkan, İlker Demiroğlu, Şinasi Ellialtıoğlu "Structural and Electronic Investigation of Pentacene Thin Films on Flat and Stepped Ag(111) Surfaces" NanoTR-IV, June 2010
12. **M. F. Danışman**, Berrin Özkan "Kuvars Kristal Mikro Terazi Uygulamaları için Altın ve Gümüş Filmlerin Hazırlanması" 24. Ulusal Kimya Kongresi, June 2010
13. **M. F. Danışman**, Ersen Mete, Berrin Özkan, İlker Demiroğlu, Şinasi Ellialtıoğlu, "Structural and Electronic Investigation of Pentacene Thin Films on Flat and Stepped Ag(111) Surfaces", European Conference on Surface Science, September 2010
14. **M. F. Danışman**, Ersen Mete, Berrin Özkan, İlker Demiroğlu, Şinasi Ellialtıoğlu "Structural and Electronic Investigation of Pentacene Thin Films on Flat and Stepped Ag(111) Surfaces" Chemical Physics Congress – IX, October 2010
15. **M. F. Danışman,** Ersen Mete, İlker Demiroğlu, Sinasi Ellialtıoğlu "Pentacene thin films on vicinal Ag(111) surfaces" American Chemical Society National Meeting, March 2011
16. **M. F. Danışman,** Ersen Mete, İlker Demiroğlu, Sinasi Ellialtıoğlu "Pentacene thin films on vicinal Ag(111) surfaces" American Physical Society National Meeting, March 2011
17. **M. F. Danışman**, Erol Albayrak, Gianangelo Bracco "Basamaklı Ag(111) Yüzeyler Üzerinde Pentasen Filmlerin İncelenmesi" 25. Ulusal Kimya Kongresi, June 2011
18. **M. F. Danışman**, Ersen Mete, İlker Demiroğlu, Erol Albayrak, Gianangelo Bracco, Şinasi Ellialtıoğlu "Influence of steps on the tilting and adsorption dynamics of ordered pentacene films

on vicinal Ag(111) surfaces" Advances in Applied Physics and Materials Science Congress, April 2012

19. **M. F. Danışman**, Erol Albayrak, Gianangelo Bracco, Eylem Turan "Study of Long Chain Thiols and Asymmetric Disulfide Self Assembled Monolayers as Possible Bottom-up Templating Agents "16th International Conference on Solid Films and Surfaces, Italy, June 2012
20. **M. F. Danışman** "Study of Long Chain Thiols and Asymmetric Disulfide Self Assembled Monolayers as Possible Bottom-up Templating Agents" Chemical Physics Congress - X, Ankara, October 2012
21. **M. F. Danışman "**Fiber Loop Ring Down Spectroscopy For Trace Chemical Detection" COST Action TD1105-European Network on New Sensing Technologies for Air-Pollution Control and Environmental Sustainability – EuNetAir-Workshop, Kopenhag, October 2013
22. **M. F. Danışman "**Helim Diffraction Study of Long Chain Thiols and Asymmetric Disulfide SelfAssembled Monolayers on Au(111) Prepared by Supersonic Molecular Beam Deposition" 19th International Vacuum Congress, Paris, September 2013
23. **M. F. Danışman** "Helium Diffraction Studies of Organic Thin Films on Metal Surfaces" 4. Ulusal Kristalografi Toplantısı, Diyarbakır, May 2014
24. **M. F. Danışman**, Okan Esentürk, Halil Berberoğlu, Md. Abu Sayed, Alim Yolalmaz "Eser Madde Tayini için Fiber Halka Ring-Down Spektroskopi Sistemi Geliştirilmesi" IV. Fiziksel Kimya Kongresi, Denizli, June 2014
25. **M. F. Danışman,** Ersen Mete, "Disperison corrected density functional theory study of pentacene films on Au(111) surfaces" 30th European Conference on Surface Science, Antalya, August 2014
26. **M. F. Danışman**, Okan Esentürk, Md. Abu Sayed, Alim Yolalmaz **"**Fiber Loop Ring Down Spectroscopy For Trace Chemical Detection" 11 Kimyasal Fizik Kongresi, İstanbul, October 2014
27. **M. F. Danışman**, Okan Esentürk, Md. Abu Sayed, Alim Yolalmaz **"**Acetylene Detection By Fiber Loop Ring-Down Technique" COST Action TD1105-European Network on New Sensing Technologies for Air-Pollution Control and Environmental Sustainability – EuNetAir-Scientific Meeting, İstanbul, December 2014
28. **M. F. Danışman,** Ersen Mete, Erol Albayrak "Pentacene thin films on flat and vicinal Au(111) surfaces" American Physical Society National Meeting, March 2015
29. **M. Fatih Danışman,** Ersen Mete, Ayşen Yılmaz "A Density Functional Theory Investigation of CarboranethiolSelf-Assembled Monolayers on Au(111)" American Chemical Society National Meeting, San Diego, March 2016
30. **M. F. Danışman**, Alim Yolalmaz, Farhad Hanifepour, Okan Esentürk "Intracavity acetylene detection with fiber loop ring down spectroscopy" COST Action TD1105-European Network on New Sensing Technologies for Air-Pollution Control and Environmental Sustainability – EuNetAir-Workshop, Prag, October 2016
31. **M. F. Danışman**, E. Mete, M. Yortanlı "Au(111) yüzeyler üzerinde alkantiyol filmlerin van der Waals DFT metoduyla incelenmesi" 3rd Computational Chemistry Congress, Ankara, October 2017.
32. **M. F. Danışman**, A. Yavuz "Perfluoropentacene Films on Metal Surfaces" NanoTR-13, Antalya, October 2017
33. **M. F. Danışman**, A. Yavuz, G. Bracco "Construction of a New Multi-technique Helium Diffraction System" NanoTR-13, Antalya, October 2017