KEVSER SAHIN-TIRAS

~ Ph.D. in Physics ~

CURRICULUM VITAE*

CONTACT INFORMATION

Erciyes University
Department of Physics
Kayseri, Turkey

E: kevser.sahintiras@erciyes.edu.tr
Office phone: +903522076666-Ext:33119
Office: C1-2K-06

SUMMARY OF QUALIFICATIONS

- Design, Fabrication and Characterization of Organic Light Emitting Diodes (OLEDs) and Organic Photovoltaics (OPVs), Organic-Inorganic Perovskite Solar Cells.
- Thin film fabrication using vacuum deposition with e-beam/thermo evaporation, sputtering, polymer solution preparation and spin coating process.
- Nano-imprint lithography, Focused ion beam lithography, Reactive Ion Etching, Clean Room operation.
- Electroluminescence and Photoluminescence, Ellipsometry Measurements, Photo induced absorption spectroscopy, Magnetoresistance and Magneto-electroluminesence Measurements, SEM, AFM, TEM and Magneto Optic Kerr Effect (MOKE)

EDUCATION

2012-2018 **Ph.D. Physics**, **The University of Iowa**, Iowa City, IA, USA
Dissertation: Magnetic Field Effect and Other Spectroscopies Of Organic Semiconductor and Hybrid Organic-Inorganic Perovskite Devices

2010-2012 **M.Sc. Physics, The University of Iowa**, Iowa City, IA, USA
Critical Essay: Fuel Cells: Direct Methanol Fuel Cells and Solid Oxide Fuel Cells

2004-2008 **B.Sc. Physics**, **Nigde University**, Nigde, TURKEY
Research: Experiments on piezoelectric crystals and ultrasound

RESEARCH EXPERIENCE

2012-2018 **Research Assistant**, **Supervisor**: Prof. Markus Wohlgenannt
Department of Physics and Astronomy, University of Iowa, Iowa City, IA, USA

- Characterization of immense response of magnetic field effect in exciplex OLEDs
- Measurement of photo-induced absorption spectroscopy of OPVs and OLEDs
- Magnetic field effect studies in bipolar and unipolar polythiophene devices
- Fabrication and characterization of hybrid perovskite solar cells

2010-2012 **Research Assistant**, **Supervisor**: Prof. Johna Leddy
Department of Physics and Astronomy & Department of Chemistry, University of Iowa, Iowa City, IA- USA

» Fuel Cells, Solid Oxide Fuel Cells and Direct Methanol Fuel Cells

2004-2008 **Undergraduate Project Assistant**, **Supervisor**: Prof. Refik Kayali
Department of Physics, Nigde University, Nigde, TURKEY

» Characterization of piezoelectric crystals using ultrasonic techniques
» Completed a final year project on piezoelectric crystals

PUBLICATIONS & PRESENTATIONS

Peer Reviewed Journal Articles (SCI & SCIE)

[1] Sevgili O., Orak I., **Sahin-Tiras K.,** 'The examination of the electrical properties of Al/Mg_2Si/p-Si Schottky diodes with an ecofriendly interfacial layer depending on temperature and frequency', *submitted Physica E: Low-dimensional Systems and Nanostructures.*

[2] **Sahin Tiras K.**, Rupasinghe T., Wohlgenannt M., Tivanski A., 'Thermal Annealing Effect on the Surface Morphology and Efficiency of Photovoltaic Cells', *Journal of Polytechnic*, 2021.

[3] **Sahin-Tiras K.,** Riedl A., Wohlgenannt M., Rybicki J., 'Identification of both bipolaron and electron-hole pair contributions to organic magnetoresistance in a regioregular polythiophene device', O*rganic Electronics,* 2017.

[4] Wang Y.*, **Sahin-Tiras K.***, Harmon N. J., Wohlgenannt M., Flatté M. E., 'Immense magnetic response of exciplex light emission due to correlated spin-charge dynamics', *Physical Review X,* 2016 (*equally contributed).

[5] Wang Y., Harmon N. J., **Sahin-Tiras K.**, Wohlgenannt M., Flatté M. E., 'Anomalous organic magnetoresistance from competing carrier-spin-dependent interactions with localized electronic and nuclear spins', *Physical Review B*, 2014.

Peer Reviewed Conference Abstracts & Presentations

[16] **Sahin-Tiras K.,** "Two-step solution and Solution-Assisted Vapor Deposition Techniques to Fabricate CH3NH3PbI3 Perovskite Films and Solar Cells" International Conference on Emerging Photovoltaic Materials and Technologies, ICEPV–2022, 27th – 29th April, 2022, Ankara, Turkey.

[15] **Sahin-Tiras K.,** "Farklı Teknikler Kullanarak Üretilmiş Perovskit Filmlerinin Morfolojisinin ve Güneş Pillerinin Veriminin İncelenmesi", *26. Yoğun Madde Fiziği Ankara Toplantısı*, 24 Aralık 2021.

[14] **Sahin-Tiras K.**, "Triplet exciton improvement via galvinoxyl spin radical to increase the power conversion efficiency of photovoltaic cells", *37th Turkish Physical Society International Congress,* September 1-5, 2021.

[13] **Sahin-Tiras K.**, M. Wohlgenannt, F. Toor, "Comparison of deposition techniques for hybrid perovskite solar cells", *American Physical Society (APS) March Meeting,* March 15-19, 2021.

[12] **Sahin-Tiras K.**, Identifying the Spin Mixing Mechanisms in Excitonic and Exciplex Organic Light Emitting Diodes, *62nd Electronic Materials Conference,* June 24-26, 2020 (Poster – online presentation).

[11] **Sahin-Tiras K.***, Wang Y., Rybicki J., et al. "Fingerprints of Three Regimes of Magnetic Field Effects: Bipolaron Magnetoresistance, and Excitonic and Exciplex Magnetoelectroluminescence", *International Meeting on Spins in Organic Semiconductors (SPINOS)*, October 16-20, 2016, Chicago, IL, USA (*speaker)

[10] Wohlgenannt M.*, Wang Y., **Sahin-Tiras K.**, et al. "Anomalous Organic Magnetoresistance from Competing Spin-dependent Interactions with Localized Electronic and Nuclear Spins", *International Meeting on Spins in Organic Semiconductors (SPINOS)*, October 16-20, 2016, Chicago, IL, USA

[9] Wang Y.*, **Sahin-Tiras K.,** Harmon N. J., et al. "Magnetic Field Effects in Thermally-Activated Delayed Fluorescence Organic Blends: Pristine Effects and Enhancement by Conditioning", *International Meeting on Spins in Organic Semiconductors (SPINOS)*, October 16-20, 2016, Chicago, IL, USA

[8] **Sahin-Tiras K.,** Wang Y., Rybicki J., et al. "Magnetic field effects in regio-regular polythiophene based devices and thermally activated delayed fluorescence organic light emitting diodes", *American Physical Society (APS) 2016 Annual Fall Meeting*, October 6-8, 2016, DeKalp, IL, USA

[7] **Sahin-Tiras K.**, et al., **"**Light Efficiency Improvement of Organic Light Emitting Diodes", 18th James F. Jakobsen Graduate Conference, March 26th, 2016, Iowa City, IA, USA.

[6] **Sahin-Tiras K.**, et al., "A comparison between magnetic field effects in excitonic and exciplex OLEDs", *American Physical Society (APS) Annual March Meeting*, March 14-18, 2016, Baltimore, MD, USA.

[5] **Sahin-Tiras K**., "Magnetic Field Effects of Photo-Induced Absorption and Photo-Luminescence in Organic Photovoltaic Solar Cells", *The 17th Annual James F. Jakobsen Graduate Conference*, March 28, 2015, Iowa City, IA, USA

[4] **Sahin-Tiras K.**, "Efficiency improvement of organic photovoltaic cells by harvesting triplet excitons", *16th James F. Jakobsen Graduate Conference*, March 29th, 2014, Iowa City, IA, USA

[3] **Sahin-Tiras K.,** et al., "Interfering effects of localized electronic and nuclear spins on carrier transport in organic semiconductors", *American Physical Society (APS) 2014 Annual Fall Meeting*, November 21-22, 2014, Monmouth, IL, USA

[2] **Sahin-Tiras K**., et al., "Using Localized Electronic and Nuclear Magnetic Moments in Organic Solid-State Magnetic Field Sensors and Photovoltaic Devices", *Midwest Organic Solid State Chemistry (MOSSCS) Symposium 2014*, June 13-14, Iowa City, IA, USA

[1] **Sahin-Tiras K**., "The effect of thermal annealing on the performance of polymer based organic photovoltaic cells: P3HT/PCBM", *15th James F. Jakobsen Graduate Conference*, April 6th, 2013, Iowa City, IA, USA

Invited Talks, Workshops & Presentations

[1] **Sahin-Tiras K.,** et al., **"**Identification of Both Bipolaron and Electron-Hole Pair Contributions to Organic Magnetoresistance in a Regioregular Polythiophene Device", *Optical Science & Technology Center (OSTC) Symposium*, May 5, 2017, Iowa City, IA, USA

[2] **Sahin-Tiras K.,** et al., **"**Magnetic Field Effects in Exciplex Organic Light Emitting Diodes", *Optical Science & Technology Center (OSTC) Symposium*, April 29, 2016, Iowa City, IA, USA

[3] **Sahin-Tiras K**., et al., **"**Magnetic Field Effects in Organic Semiconductor Devices", *TASSA Annual Conference*, April 2-3, 2016, Iowa City, IA, USA

[4] **Sahin-Tiras K.,** et al., **"**Immense Magnetic Response of Organic Light Emitting Diodes", *Nano-Science & Nano-Technology Institute*, February 12, 2016, Iowa City, IA, USA

[5] **Sahin-Tiras K.**, et al., *"Using Localized Electronic and Nuclear Magnetic Moments in Organic Solid-State Magnetic Field Sensors and Photovoltaic Devices"*, *Midwest Organic Solid State Chemistry (MOSSCS) Symposium 2014*, June 13-14, Iowa City, IA, USA

[6] **Sahin-Tiras K**., et al., "Interfering effects of localized electronic and nuclear spins on carrier transport in organic semiconductors", *Optical Science & Technology Center (OSTC) Symposium 2014*, May 2, Iowa City, IA, USA

GRANTS, RESEARCH FUNDING & ACADEMIC SUPPORT

Patent Application

[1] Apparatus, System and Method for Organic Light-Emitting Diodes Allowing Spin Mixing Prior to Radiative Recombination, provisional application filed September 25, 2015

• Inventors: M. Wohlgenannt, M. E. Flatté, **K. Sahin-Tiras**, Y. Wang, Nicholas J. Harmon, U.S. Provisional Patent Application No.: 62/197,371

AWARDS & RECOGNITION

2021 **Award,** American Physical Society (APS) Forum for Early Career Scientists (FECS) Mini Grant for APS March Meeting, Online

2017 **Fellowship,** *Ballard and Seashore Dissertation Fellowship,* Graduate College, University of Iowa, Iowa City, IA, USA

2016 **Award,** *Travel Award*, Graduate Student Senate (GSS), University of Iowa, Iowa City, IA, USA

2016 **Fellowship,** *Post-comprehensive Summer Fellowship,* Graduate College, University of Iowa, Iowa City, IA, USA

2013 **Award,** *Travel and Registration*, Turkish Ministry of Education, *SOLAR-PEACE*

2013 **Award,** *Travel Award*, Executive Council of Graduate and Professional Students (ECGPS), *ITAP,* Marmaris, Turkey

2009 **Award,** Graduate studies fellowship of $140,000 (all tuitions, fees and a stipend) for the USA by the Turkish Government for 2010-2015

2008 **Honor,** Ranked 4th in the Department of Physics at Nigde University, Nigde, Turkey

PROFESSIONAL ACTIVITIES

Professional Workshops & Summer Schools

2014 **LabView Workshop**, IEEE Cedar Rapids Section, Kirkwood Community College, September 30, 2014, Cedar Rapids, IA, USA.

2013 **International Summer School and Workshop on Physics and Chemistry of Solar Energy,** August 24-30, 2013, Marmaris, Turkey.

2012 **Spectroscopic Ellipsometry Workshop**, IATL, University of Iowa, September 10 2012, Iowa City, IA, USA.

Boards & Services

2013 **Reviewer**, *Research Grant Proposal*, Executive Council of Graduate and Professional Students (ECGPS), University of Iowa, Iowa City, IA, USA

2013 **Session Moderator**, *15th James F. Jakobsen Graduate Conference*, Iowa City, IA, USA

2013 **Judge**, Undergraduate Science and Engineering Research Festival (SURF), *15th Jakobsen Graduate Conference*, University of Iowa, Iowa City, IA, USA

2013 **Judge**, The Eastern Iowa Science and Engineering Fair, Cedar Rapids, IA, USA

2012 **Judge**, Solon High School Science Fair, Solon, IA, USA

Professional Society Membership

2013-2018 IEEE- Institute of Electrical and Electronics Engineers
2012-present APS- American Physical Society
2012-2018 TASSA-Turkish American Scientists and Scholars Association
2010-2018 WISE- Women in Science and Engineering

COMPUTATIONAL SKILLS

Scientific Engineering Software Mathematica (Wolfram), Maple (Maplesoft), Origin Lab, Complete Ease Ellipsometry, LabView

Operating Systems Mac OS X Snow Lion, Google Chrome OS, Unix, Windows 8/7/2000 /NT /XP/ Vista

Software Platforms Microsoft Office 2003/2007/2010 [Word, Excel, P.P., Access], Flash, Open Office, LaTeX