BURAK ESAT, PH.D.

2727 Field Line Drive Sugar Land, TX 77479
besat0869@gmail.com
(346) 313-0314
https://www.linkedin.com/in/burak-esat
Residency Status: Permanent US resident

Education

- ***Ph.D, Chemistry-University of Massachusetts-Amherst, Amherst, MA-2001***
  Thesis title: "Nitronyl nitroxides and benzimidazole -3 -oxide -1 -oxyls as building blocks of organic magnetic materials". Supervised by Prof. Paul Lahti.
- ***M.S., Chemistry- Bogazici University, Istanbul, Turkey-1995***
  Thesis title. "Effect of Aminosilane coupling agents on the physical properties of PVC-perlite composites". Supervised by Prof. Selim Kusefoglu.
- ***B.Sc., Chemistry- Bogazici University, Istanbul, Turkey-1991***

Professional Experience

- ***Adjunct Teaching Faculty, Houston Community College- Houston TX (2019-present)***
  - Teaching general chemistry courses and laboratory courses.
- ***Adjunct Teaching Faculty, Lone Star College-Kingwood, Houston TX (2019-present)***
  - Teaching general chemistry courses and laboratory courses.
- ***IIE-SRF Research Fellow & Teaching Faculty, Rutgers University-New Brunswick & Newark, NJ (2017-2019)***
  - Graphene/Carbon modification for artificial solid-electrolyte interface (SEI)development in rechargeable batteries. Organic functionalization of material surfaces via reactive intermediates. Organic reactive intermediate design and synthesis.
  - Teaching general chemistry courses and laboratory courses.
- ***Associate Professor, Fatih University, Istanbul, Turkey (2012-2016)***
  - Supervised research on development of organic electro-active molecular, polymeric and carbon-based materials for rechargeable battery applications
  - Served as Principal Investigator in EU-, Government- and University-funded research projects. Obtained research grants >$600,000.
  - Developed international and nation-wide scientific collaborations leading to 8 scientific articles, 10+ scientific meeting presentations, an international scientific cooperation project grant between Turkey and Bulgaria.
  - Authored 18 scientific articles and made presentations in 10+ international scientific conferences which received 275 citations
- ***Assistant Professor, Fatih University, Istanbul, Turkey (2005-2012)***
  - Supervised research on development of organic electro-active molecular, polymeric and carbon-based materials for rechargeable battery applications
  - Developed and taught undergraduate- and graduate-level chemistry courses including organic chemistry, physical organic chemistry, organic reaction mechanisms, electrochemistry, quantum chemistry, and general chemistry.
  - Supervised thesis of numerous undergraduate students, six M.S. and two Ph.D. students.
  -

- ***R&D Manager, Gemsan Industrial Chemicals Inc., Istanbul, Turkey (2004-2005)***
  - Supervised Metal Working Fluids (MWF) and Leather Chemicals R&D Department with 5+ chemists and technicians
  - Developed 3 new formulations and a new polymeric lubricant for MWFs
  - Prepared and supervised Industrial R&D projects funded by government agencies.
  - Consulted the sales, production and purchasing departments to ensure effective marketing and consistent production of new and existing products.
  - Supervised the technical support department in MWFs and Leather Chemicals.

- ***Post Doctoral Researcher, Michigan State University, East Lansing, MI (2002-2004)***
  - Characterization of organic compounds and enzyme active centers with CW- and Pulsed-Electron Spin Resonance Spectroscopy techniques.
- ***Visiting Assistant Professor, University of Iowa, Iowa City, IA (2001-2002)***
  - Taught organic chemistry and organic chemistry lab courses
- ***Teaching & Research Assistant, University of Massachusetts-Amherst, Amherst, MA (1995-2000)***
  - Worked on my thesis project titled "Nitronyl nitroxides and benzimidazole -3-oxide-1-oxyls as building blocks of organic magnetic materials;" supervised by P.M. Lahti.
  - Supervised students in organic chemistry labs for 4 years
- ***Teaching Assistant, Bogazici University, Istanbul, Turkey (1993-1995)***
  - Thesis title: "Effect of Aminosilane coupling agents on the physical properties of PVC-perlite composites;" supervised by S. Kusefoglu.
  - Supervised students in general, organic and upper-level qualitative organic chemistry labs for 3 years.

Areas of Expertise

- Teaching chemistry courses and chemistry laboratory courses at community colleges and universities.
- Organic molecular synthesis and characterization,
- Polymer synthesis and characterization,
- Polymer Chemistry
- Graphene and carbon nanotube modification,
- Composite materials synthesis and characterization,
- Organic rechargeable batteries and organic electrochemistry,
- ESR spectroscopy,
- Study of structure-property relationships of organic materials

Teaching Experience

Undergraduate Level:

- Introductory Chemistry: 2019
- General Chemistry I: 2019
- Introductory Chemistry Laboratory: 2019
- General Chemistry I Laboratory: 2019
- Chemistry of Life Lab: 2018

- General Chemistry:2017-18
- General Chemistry for Engineers, 2007-11
- General Chemistry for Non-majors, 2008
- General Chemistry-I & II, 2005-2015 Introduction to Organic Chemistry, 2007-16
- General Chemistry for Non-Science Students, 2017-18
- Organic Chemistry-I & II, 2007-2016
- Organic Chemistry Lab- I & II, 2007-2016
- Organic Reaction Mechanisms, 2010-2016
- Physical Organic Chemistry, 2012-2015
- Electrochemistry, 2016
- Undergraduate Research Project, 2005-2016

Graduate Level:
- Advanced Physical Organic Chemistry, 2010-2015
- Advanced Organic Chem.& Applications, 2014
- Chemistry of Nanomaterials. 2015

Publications

Published Articles
- Weitao Pan, Maitland Jones Jr., **Burak Esat**, Paul M. Lahti, "Photolysis of Naphtho[b]cyclopropene. Detection of a Diradical Intermediate", *Tetrahedron Letters*, 39, 1505-1508 (1998)
- Paul M. Lahti, **Burak Esat**, Richard Walton, "2-(4'-Nitrenophenyl)-4,4,5,5-tetramethyl-4,5-dihydro-1H-imidazole-3-oxide-1-oxyl: Photogeneration of a Quartet State Organic Molecule with Both Localized and Delocalized Spins", *Journal of The American Chemical Society (JACS)*, 120, 5122-5123 (1998)
- Paul M. Lahti, **Burak Esat**, Jacqueline R. Ferrer, Yanbing Liu, Kenneth A. Marby, Chunping Xie, Clifford George, "Polymeric, H-Bonded, and Chelatable Phenoxyl and Nitroxide Radicals", *Molecular Crystals & Liquid Crystals*, 1999, 285-294 (1999)
- Paul M. Lahti, **Burak Esat**, Yi Liao, Paul Serwinski, Jiang Lan, Richard Walton, "Heterospin Organic Molecules: Nitrene-Radical Linkages", *Polyhedron*, 20, 1647-1652 (2001)
- **Burak Esat**, Paul M. Lahti, Michel Julier, Fernando Palacio, "2-(3',5'-"Difluorophenyl)-nitronylnitroxide: testing spin-overlap structure-property relationships for interelectronic exchange", *Crystal Engineering Communications*, 11, 59-63 (2002)
- Paul M. Lahti, Paul R. Serwinski, **Burak Esat**, Yi Liao, Richard Walton, Jiang Lan, "Photolysis and Oxidation of Azidophenyl-Substituted Radicals; Delocalization in Heteroatom-Based Radicals", *Journal of Organic Chemistry*, 69, 5247-5260 (2004)
- **Burak Esat**, Ismail Fidan, Sumeyye Bahceci, Yusuf Yerli and Levent Sari, "Effect of substituents on spin density in benzimidazole nitronyl nitroxide radicals studied by electron spin resonance", *Magnetic Resonance in Chemistry*, 47, 641-650 (2009)
- Hilal Onay, **Burak Esat**, Ramazan Öztürk, "The symmetrical porphyrazine with annulated six membered rings", *Polyhedron*, 29, 1314-1316 (2010)

- M. Aydın, Z. Durmus, H. Kavas, **B. Esat**, H.Sözeri, A. Baykal, F. Yılmaz, M.S. Toprak, "Synthesis and Characterization of Poly (3-thiophene acetic acid)/Fe3O4 nanocomposite", *Polyhedron*, 30, 1120-1126 (2011)

- S. Bahceci, B. Unal, A. Baykal, H.Sözeri, E. Karaoglu, **B.Esat**, "Synthesis and Characterization of Polypropiolate Sodium (PPNa)-Fe_3O_4 nanocomposite", *J. Alloy Compd.*, 509, 8825– 8831 (2011)
- Beyza Bilgiç, Çetin Kılıç*, **Burak Esat**, "First-principles study of polyacetylene derivatives bearing nitroxide radicals", *Phys. Rev. B*, 84, 115207 (2011)
- Aydin, M., **Esat, B**., Kılıç, Ç. Köse, M.E., Ata, A., Yılmaz, F., "APolythiophene Derivative Bearing TEMPO as a Cathode Material for Rechargeable Batteries", *European Polymer Journal*, 47, 2283–2294 (2011)
- M. Aydin, B. Ünal,, **B. Esat**∗, A. Baykal, E. Karaoglu, M.S. Toprak, H. Sözeri, "Synthesis, magnetic and electrical characteristics of poly(2-thiophen-3-yl-malonic acid)/Fe_3O_4 nanocomposite", *J. Alloy Compd.*, 514, 45-53 (2012)
- S. Bahceci, **Burak Esat**, "A Polyacetylene Derivative with Pendant TEMPO Group As Cathode Material For Rechargeable Batteries", *Journal of Power Sources*, 242, 33-40 (2013)
- M. Aydin, **B. Esat**, "A polythiophene derivative bearing two electroactive groups per monomer as a cathode material for rechargeable batteries", *Journal of Solid State Electrochemistry*, 19, 8, 2275-2281 (2015)
- S. Bahceci Sertkol, D. Sinirlioglu, **B.Esat**, A. E. Muftuoglu," A Novel Cathode Material Based on Polystyrene With Pendant TEMPO Moieties Obtained via Click Reaction And Its Use in Rechargeable Batteries", *J. Polym. Res.* 22, 7, 1-11 (2015).
- S. Akay Sazaklioglu, **B. Esat,** D. Vladikova, I. Genov, E. Mladenova, "A Novel Proton Conducting Polymer Functionalized with 1-Hydroxy-Benzimidazole-3- oxide", *Intl. J. Hydrogen Energy*, 41, 28,12101-12107 (2016)
- **B.Esat**, S. Bahceci-Sertkol,A. A Momchilov, B.M Yılmaz, M. Sertkol, "An Anthraquinone-Functionalized Reduced Graphene Oxide as Electrode Material for Rechargeable Batteries", *Carbon*, 116, 154-166 (2017).

Meeting Oral Presentations and Workshops Presented

- **B Esat**, Ç Kılıç, M E Kose, A Ata, "Organic Electrodes for Batteries", *217th ECS Meeting*, Vancouver, BC, Canada, (2010)
- **Burak Esat**, Sümeyye Bahçeci, Sevda Akay, Muhammed Aydın, "Organic Electro- Active Polymers for Rechargeable Batteries", *Third Regional Symposium on Electrochemistry-South-East Europe*, Proceedings of Third Regional Symposium on Electrochemistry-South-East Europe, 1, 79, Bucharest, Romania, (2012)
- Busra Sengez, Zuhal Alparslan Arif Kosemen, Derya Malkoc, Muhammet Aydin, **Burak Esat**, Engin Basaran,, "Synthesis, Characterization And Field Effect Transistor Performance Of Thiophene End-Capped And Fullerene Pendant Styrene Copolymer", *MACRO2012 World Polymer Congress 2012* , Virginia USA, (2012)
- **Burak Esat**, "Design of portable and flexible electronic equipment requires development of fast recharging, flexible, small, light-weight, and environmentally compatible batteries with high power and energy capacit", *Materials Science & Technology 2012*, Pittsburg Pennsylvania USA, (2012)
- **B. Esat**, M. Aydın, "Toward Fully Plastic Batteries: Electroactive Polymer-Carbon

Composite Electrode As Cathode Material For Rechargeable Batteries", *246th American Chemical Society National Fall 2013 Meeting & Conference,* Indianapolis Indiana USA (2013)

Theses Supervised

Ph.D. Theses

- İsmail Fidan, " *Benzimidazole-3-oxide-1-oxyl stable free radicals and their metal complexes* " Gebze Institute of Technology, Gebze, TURKEY (in progress)
- Sümeyye Bahçeci, "Organic Functionalized CNT and Graphene Based Materials for Energy Applications", Fatih University/Istanbul University-Istanbul,TURKEY (July 2018)

M.S. Theses

- Sümeyye Bahçeci, "*Polyradical Based Organic Electrodes to be Used in Organic Plastic Batteries*", Fatih University-Istanbul,TURKEY, 2008
- Hilal Doğan, "Sta*ble Radical Bearing Novel Organic Polymer Composite Electrodes*", Fatih University-Istanbul,TURKEY, 2009
- Abdullahi Aliyu Bawa, "*Quinone Diimine Based Electroactive Materials for Rechargeable Battery Application*", Fatih University-Istanbul,TURKEY, Jun.2014
- Sevda Akay, "*Electrochemistry of Benzimidazole Nitronyl Nitroxides And Their Utilization as Electrode Materials for Secondary Batteries*", Fatih University-Istanbul,TURKEY, June 2014.
- Kabiru Bashir Ahmad, "*Isoindigo Based Material for Energy Applications*", Fatih University-Istanbul,TURKEY, May 2017.
- Abubakar Sulaiman Ado, "*Electrochemical Materials Based on A Polymer with Pendant Aniline Oligomer For Rechargeable Battery Applications*", Fatih University-Istanbul, TURKEY, May 2017.

Awards/Honors

- IIE-SRF Fellowship Award, November 2016
- Outstanding Researcher, Fatih University, 2014 & 2015
- Valedictorian, Class of 1991, Bogazici University, Istanbul, Turkey

Administrative Duties

- Deputy Manager- Institute of Physical Sciences and Engineering, Fatih University, 2011-2016

Referee Work

- For scientific journals: Journal of Alloys and Compounds, Journal of Solid-State Electrochemistry, Journal of Nanoparticle Research.
- For the Scientific and Technological Research Counsel of Turkey (TUBITAK) on committees judging grant applications of fellow researchers and also acted as reviewer and observer for progress of several industrial research projects funded

by TUBITAK.
- Served on numerous thesis committees of PhD and Master students in Fatih University and other universities in Istanbul-Turkey.

Selected Professional Service Highlights

- Scientific Committee Member, 5th Regional Symposium on Electrochemistry South East Europe (RSE-SEE5), Pravets-Bulgaria, June 2015
- Committee member, Curriculum Enrichment and Teaching Excellence Committee, Fatih University, 2015-2016
- Administrative Board Member, Fatih University Institute of Physical Sciences, 2011- 2016
- Fatih University Chemistry Department Technical Supervisor of the NMR Facilities, 2007-2016

Professional Society Memberships

- American Chemical Society (ACS)
- Society for Tribologists and Lubrication Engineers
- Electrochemical Society (ECS)
- International Society of Electrochemistry