

Asst. Prof. DEMET ASİL ALPTEKİN

Personal Information

Email: adem@metu.edu.tr

Web: <https://ODTÜ Kimya Bölümü>

International Researcher IDs

ScholarID: W87QS6QAAAAJ

ORCID: 0000-0001-6368-7151

Publons / Web Of Science ResearcherID: G-7802-2019

ScopusID: 23988682800

Yoksis Researcher ID: 163842

Education Information

Doctorate, University of Cambridge-Sidney Sussex College, The Cavendish Laboratory, Department of Physics, England
2011 - 2015

Postgraduate, Middle East Technical University, Graduate School of Natural and Applied Sciences, Kimya (YI) (Tezli),
Turkey 2006 - 2008

Undergraduate Double Major, Middle East Technical University, Faculty of Engineering, Department of Chemical
Engineering, Turkey 2001 - 2006

Undergraduate, Middle East Technical University, Faculty of Arts and Sciences, Department of Chemistry, Turkey 2000 -
2005

Foreign Languages

English, B2 Upper Intermediate

Dissertations

Postgraduate, A glow in the dark: synthesis and electropolymerization of chemiluminescent thiophene derivatives,
Middle East Technical University, Graduate School of Natural and Applied Sciences, Kimya (YI) (Tezli), 2016

Doctorate, Hybrid Functional Materials for Optoelectronic Applications, University Of Cambridge-Sidney Sussex College,
2015

Research Areas

Physics, Chemistry

Academic Titles / Tasks

Assistant Professor, Middle East Technical University, Faculty of Arts and Sciences, Department of Chemistry, 2018 -
Continues

Assistant Professor, Middle East Technical University, Faculty of Arts and Sciences, Department of Chemistry, 2016 -

2018

Lecturer PhD, Middle East Technical University, Faculty of Arts and Sciences, Department of Chemistry, 2015 - 2016

Research Assistant, Middle East Technical University, Faculty of Arts and Sciences, Department of Chemistry, 2007 - 2015

Courses

2340353 Physical Chemistry II (sec 1), Undergraduate, 2023 - 2024

Physical Chemistry I, Undergraduate, 2021 - 2022

GENERAL CHEMISTRY , Undergraduate, 2022 - 2023, 2021 - 2022, 2020 - 2021, 2019 - 2020, 2018 - 2019

Physical Chemistry Laboratory I, Undergraduate, 2021 - 2022

PHYSICAL CHEMISTRY II, Undergraduate, 2022 - 2023

PHYSICAL CHEMISTRY II , Undergraduate, 2021 - 2022

Supervised Theses

Asil Alptekin D., Development of ligand exchange and coating strategies for the colloidal quantum dot based high-resolution short-wave infrared imaging sensors, Postgraduate, B.UZUN(Student), 2024

Asil Alptekin D., Donor-acceptor type bulk nano-heterojunction solar cell designs based on electronically coupled lead selenide nanorods and lead selenide quantum dots, Postgraduate, İ.KOLAY(Student), 2022

ASİL ALPTEKİN D., Development of solar cells based on surface passivated lead telluride quantum dots and lead selenide nanorods; a comprehensive approach targeting the instability and surface mediated trap states, Postgraduate, T.Hacıfendioğlu(Student), 2020

Published journal articles indexed by SCI, SSCI, and AHCI

- I. **Synergistic hybrid nanostructures for Ultra-Sensitive photoelectrochemical detection of hepatocellular carcinoma ctDNA**
Okan M., Çağlayan Arslan Z., Aydın F., ASİL ALPTEKİN D., KÜLAH H.
Microchemical Journal, vol.208, 2025 (SCI-Expanded)
- II. **Unveiling the potential of direct synthesized PbS CQD ink based solar cells through numerical simulation**
Uzun B., ASİL ALPTEKİN D.
Scientific Reports, vol.14, no.1, 2024 (SCI-Expanded)
- III. **Effect of surface ligands on the photoinduced electron transfer rate and efficiency in ZnO quantum dots and graphene oxide assemblies**
Khalid M. A., Mubeen M., Mukhtar M., Sumreen P., Naz B., Aydın F., ASİL ALPTEKİN D., Iqbal A.
Photochemistry and Photobiology, vol.100, no.5, pp.1204-1213, 2024 (SCI-Expanded)
- IV. **Core-Shell Quantum Dot-Embedded Polymers for Antistatic Applications**
Ekim S. D., Aydın F., Kaya G. E., BAYTEKİN H. T., ASİL ALPTEKİN D., Baytekin B.
ACS APPLIED NANO MATERIALS, vol.6, no.24, pp.22693-22700, 2023 (SCI-Expanded)
- V. **Probing the Förster Resonance Energy Transfer Dynamics in Colloidal Donor-Acceptor Quantum Dots Assemblies**
Khalid M. A., Mubeen M., Mukhtar M., Siddique Z., Sumreen P., Aydın F., Asil D., Iqbal A.
Journal of Fluorescence, vol.33, no.6, pp.2523-2529, 2023 (SCI-Expanded)
- VI. **PbSe nanorod-quantum dot bulk nano-heterojunction solar cells generating multiple excitons with record photo conversion efficiencies**
KOLAY İ., Asil D.
Materials Today Communications, vol.35, 2023 (SCI-Expanded)

- VII. **Enhanced photocurrent in PbSe nanorod-quantum dot bulk nano-heterojunction solar cells**
Haciefendioğlu T., Balıkoğlu B., Aydın F., Kolay I., Öztürk İ. M., Asil D.
JOURNAL OF MATERIALS SCIENCE-MATERIALS IN ELECTRONICS, vol.33, no.2, pp.714-724, 2022 (SCI-Expanded)
- VIII. **Aspect ratio dependent air stability of PbSe nanorods and photovoltaic applications**
Asil D., Haciefendioğlu T.
Turkish Journal of Chemistry, vol.45, no.3, pp.905-913, 2021 (SCI-Expanded)
- IX. **A comprehensive approach for the instability of PbTe quantum dots and design of a combinatorial passivation strategy**
Haciefendioğlu T., Solmaz T. K., Erkan M., Asil D.
Solar Energy Materials and Solar Cells, vol.207, 2020 (SCI-Expanded)
- X. **Role of PbSe Structural Stabilization in Photovoltaic Cells**
Asil D., Walker B. J., Ehrler B., Vaynzof Y., Sepe A., Bayliss S., Sadhanala A., Chow P. C. Y., Hopkinson P. E., Steiner U., et al.
ADVANCED FUNCTIONAL MATERIALS, vol.25, no.6, pp.928-935, 2015 (SCI-Expanded)
- XI. **Temperature- and Voltage-Induced Ligand Rearrangement of a Dynamic Electroluminescent Metallopolymer**
Asil D., Foster J. A., Patra A., de Hatten X., del Barrio J., Scherman O. A., Nitschke J. R., Friend R. H.
ANGEWANDTE CHEMIE-INTERNATIONAL EDITION, vol.53, no.32, pp.8388-8391, 2014 (SCI-Expanded)
- XII. **A new blue light emitting and electrochromic polyfluorene derivative for display applications**
Carbas B. B., Asil D., Friend R. H., ÖNAL A. M.
ORGANIC ELECTRONICS, vol.15, no.2, pp.500-508, 2014 (SCI-Expanded)
- XIII. **Aqueous Self-Assembly of an Electroluminescent Double-Helical Metallopolymer**
de Hatten X., Asil D., Friend R. H., Nitschke J. R.
JOURNAL OF THE AMERICAN CHEMICAL SOCIETY, vol.134, no.46, pp.19170-19178, 2012 (SCI-Expanded)
- XIV. **A Diverse-Stimuli Responsive Chemiluminescent Probe with Luminol Scaffold and Its Electropolymerization**
ASİL ALPTEKİN D., CİHANER A., Algi F., ÖNAL A. M.
ELECTROANALYSIS, vol.22, no.19, pp.2254-2260, 2010 (SCI-Expanded)
- XV. **Electropolymerization and ion sensitivity of chemiluminescent thienyl systems**
ASİL ALPTEKİN D., CİHANER A., ÖNAL A. M.
ELECTROCHIMICA ACTA, vol.54, no.26, pp.6740-6746, 2009 (SCI-Expanded)
- XVI. **A glow in the dark: synthesis and electropolymerization of a novel chemiluminescent terthienyl system**
ASİL ALPTEKİN D., CİHANER A., ÖNAL A. M.
CHEMICAL COMMUNICATIONS, no.3, pp.307-309, 2009 (SCI-Expanded)
- XVII. **A novel conducting polymer based on terthienyl system bearing strong electron-withdrawing substituents and its electrochromic device application**
ASİL ALPTEKİN D., CİHANER A., Algi F., ÖNAL A. M.
JOURNAL OF ELECTROANALYTICAL CHEMISTRY, vol.618, pp.87-93, 2008 (SCI-Expanded)

Refereed Congress / Symposium Publications in Proceedings

- I. **Kurşun Selenyum Kuantum Nokta ve Nanoçubuk Temelli Güneş Hücrelerinde Şeffaf ZnO Elektron İletim Tabakasının Optimizasyonu**
aydın f., ASİL ALPTEKİN D., KOLAY İ., Balıkoğlu B.
33. Ulusal Kimya Kongresi, Turkey, 07 October 2021
- II. **Kurşun Selenyum Nano çubuk Temelli Nano Heteroeklem Güneş Hücreleri: Delik Taşıma Katmanının Cihaz Performansına Etkisi**
Kolay I., Asil Alptekin D.
33. Ulusal Kimya Kongresi, Tekirdağ, Turkey, 07 October 2021

- III. **KURŞUN SELENYUM KUANTUM NOKTA VE KURŞUN SELENYUM NANOÇUBUK TEMELLI NANO HETEROEKLEM GÜNEŞ HÜCRELERİNİN GELİŞTİRİLMESİ**
KOLAY İ., ASİL ALPTEKİN D.
VIII. Ulusal Anorganik Kimya Kongresi, Turkey, 02 September 2021
- IV. **PbSe Nanorod Degree of Organization Dictated by the Ligand Structure**
ASİL ALPTEKİN D., Hacıfendioğlu T.
2021 MRS Spring Meeting & Exhibit, United States Of America, 14 April 2021
- V. **ENHANCED PHOTOCURRENT IN MIXED HALIDE TREATED QUANTUM DOT SOLAR CELLS**
Hacıfendioğlu T., ASİL ALPTEKİN D.
4th International Conference on Physical Chemistry & Functional Materials, Elazığ, Turkey, 08 April 2021
- VI. **DESIGN OF SURFACE PASSIVATION TECHNIQUES FOR PbTe QUANTUM DOTS AND APPLICATION TO PHOTOVOLTAIC DEVICES**
ASİL ALPTEKİN D., Hacıfendioğlu T., Solmaz T. K., Erkan M.
2 International Conference on Photovoltaic Science and Technologies, Ankara, Turkey, 30 November 2020
- VII. **PbSe Nanorods for hybrid solar cells: Optimization of synthesis protocols and investigation of surface stability**
Hacıfendioğlu T., Alptekin D.
2018 International Conference on Photovoltaic Science and Technologies, PVCon 2018, Ankara, Turkey, 4 - 06 July 2018
- VIII. **Design of PbTe Quantum Dot Surface Passivation Protocols: Aiming to Increase Stability and Efficiency of Photovoltaic Devices**
Erkan M., Hacıfendioğlu T., Solmaz T. K., ASİL ALPTEKİN D.
5th International Advanced Energy Materials Conference(AEM2018), Surrey, United Kingdom, 10 - 12 September 2018
- IX. **DESIGN OF PBTE QUANTUM DOTS SURFACE PASSIVATION PROTOCOLS: AIMING TO INCREASE STABILITY AND EFFICIENCY OF SINGLET FISSION SENSITIZED SOLAR CELLS**
ASİL ALPTEKİN D., Erkan M., Solmaz T. K., Hacıfendioğlu T.
PVCON, International Conference on Photovoltaic Science and Technologies, Ankara, Turkey, 4 - 06 July 2018, pp.90
- X. **PbTe Kuantum Noktacıklarının Yüzey Pasivasyon Protokollerinin Tasarımı**
ASİL ALPTEKİN D., Solmaz T. K.
29. Ulusal Kimya Kongresi, Ankara, Turkey, 10 - 14 September 2017, pp.418

Supported Projects

Asil Alptekin D., Yağız A. K., TUBITAK Project, Biyopolimer Temelli Kontrollü Salım Sistemi ile Tohum Kaplama Malzemesinin Geliştirilmesi, 2023 - 2026

Asil Alptekin D., TÜBİTAK International Bilateral Joint Cooperation Program Project, Yüksek Verimli Nano Heteroeklem Güneş Pilleri İçin Pbse Kuantum Nokta/Nanorod Karışımlarında Çoklu Eksiton Üretimi Ve Ayrışmanın Açıklanması, 2023 - 2025

ASİL ALPTEKİN D., KOLAY İ., Project Supported by Higher Education Institutions, Elektriksel Bağlaşım İçinde Olan PbSe Nano çubuk ve Kuantum Nokta Temelli Elektron Verici-Alıcı Tipi Heteroeklem Güneş Hücrelerinin Tasarımı, 2022 - 2023
Asil Alptekin D., Baytekin B., TUBITAK Project, Polimerlerde Statik Elektriklenmenin Kuantum Noktaları Kullanılarak Kontrolü, 2021 - 2023

Asil Alptekin D., TUBITAK Project, Çoklu Eksiton Üretebilen PbSe Nano Çubukları: Tuzak Bantlarını Hedef Alan Yüzey Kontrol Protokollerinin İlk Kez Geliştirilmesi ve Hibrit Güneş Pili Uygulamaları, 2018 - 2021

ASİL ALPTEKİN D., HACİFENDİOĞLU T., Project Supported by Higher Education Institutions, Rekor Harici Kuantum Verimine Sahip Güneş Hücrelerinin Geliştirilmesi, 2019 - 2020

TOPPARE L. K., ÖNAL A. M., ESENTÜRK O., DANIŞMAN M. F., EREL GÖKTEPE İ., ÇIRPAN A., ASİL ALPTEKİN D., HACALOĞLU J., Project Supported by Higher Education Institutions, İletken Kopolimer Bazlı Alkol Biyosensörleri

Geliştirilmesi, 2018 - 2019

ASİL ALPTEKİN D., ERTÜRK O., AKIN T., Project Supported by Higher Education Institutions, PbSe Koloidal Kuantum Noktacık Tabanlı Yüksek Çözünürlüklü, Kısa Dalga Boylu Kızılötesi Görüntüleme Sensörleri için Detektör Dizini Geliştirilmesi, 2017 - 2019

Esentürk O., Asil Alptekin D., TUBITAK Project, PbTe Kuantum Noktacıklarının YüzeY Modifikasyon Tekniklerinin Tasarımı Ve Singlet Fisyona Duyarlı Fotovoltaik Hücrelere Uygulanması, 2015 - 2018

TOPPARE L. K., ÖNAL A. M., ESENTÜRK O., AZERİ Ö., BÜBER E., DANIŞMAN M. F., EREL GÖKTEPE İ., ÇIRPAN A., ASİL ALPTEKİN D., HACALOĞLU J., Project Supported by Higher Education Institutions, Farklı makroyapılar kullanılarak iletken polimer bazlı çeşitli alkol biyosensörlerinin geliştirilmesi, 2017 - 2017

ASİL ALPTEKİN D., Project Supported by Higher Education Institutions, Çoklu Exsiton Üretebilen ve Tekli Fisyona Duyarlı Hibrit Güneş Pili Geliştirilmesi, 2016 - 2017

ESENTÜRK O., ÖNAL A. M., DOĞAN Ö., DANIŞMAN M. F., ASİL ALPTEKİN D., AYTEKİN Y. S., HACALOĞLU J., PERSİL ÇETİNKOL Ö., Project Supported by Higher Education Institutions, ŞARAP KALİTE TAYİNİ İÇİN YÖNTEM GELİŞTİRME ÇALIŞMALARI, 2016 - 2016

Memberships / Tasks in Scientific Organizations

Materials Research Society, Member, 2021 - Continues, United States Of America

Scientific Refereeing

RENEWABLE ENERGY, SCI Journal, January 2022

TURKISH JOURNAL OF CHEMISTRY, National Scientific Refreed Journal, August 2020

TURKISH JOURNAL OF PHYSICS, National Scientific Refreed Journal, April 2020

TUBITAK Project, 2209-A - Üniversite Öğrencileri Araştırma Projeleri Destekleme Programı, TÜBİTAK, Turkey, February 2020

TUBITAK Project, 2209-A - Üniversite Öğrencileri Araştırma Projeleri Destekleme Programı, TÜBİTAK, Turkey, February 2020

H2020 Project, H2020 Other Career Development Projects, Co-Funded Brain Circulation Scheme 2, Turkey, January 2020

Technopark, Middle East Technical University, Turkey, October 2019

TURKISH JOURNAL OF CHEMISTRY, National Scientific Refreed Journal, May 2019

RENEWABLE ENERGY, SCI Journal, April 2019

TURKISH JOURNAL OF CHEMISTRY, National Scientific Refreed Journal, January 2018

Newton Programme Project, Newton Fund-REL, Research Environment Links Project, TÜBİTAK, Turkey, November 2017

TUBITAK Project, 1003 - Priority Areas R&D Projects Support Program, TÜBİTAK, Turkey, August 2017

Mobility Activity

Bilateral Colloboration Agreement, Scientific Research, Max Planck institute for polymer research (MPI-P), Germany, 2024 - 2024

Bilateral Colloboration Agreement, Scientific Research, SESAME (Synchrotron-light for Experimental Science and Applications in the Middle East), Jordan, 2023 - 2023

Metrics

Publication: 29

Citation (WoS): 280

Citation (Scopus): 300

H-Index (WoS): 8

H-Index (Scopus): 8

Congress and Symposium Activities

5th International Advanced Energy Materials Conference(AEM2018), Working Group, London, United Kingdom, 2018

Invited Talks

2023 Nobel Seminerleri, Seminar, Orta Doğu Teknik Üniversitesi, Turkey, November 2023

Awards

Asil Alptekin D., 2019-2020 Academic Year METU Best Thesis Award, Odtü, September 2021