Curriculum Vitae (CV)

- **Passport Name:** Esmaeil Doust Khah Heragh
- **Name in publications** Esmail Doustkhah
- **Birthdate:** 1989
- **Email:** Esmail.Doustkhah@istinye.edu.tr
- **Telephone:** (+90)538-898-7994
- **Website:** www.**P**hoto**E**lectro**C**atalysis.com
- **ORCID no.** https://orcid.org/0000-0003-1459-1756
- **Language:** Azerbaijani (Native), Turkish (Fluent), English (Fluent), Persian (Fluent)
- **Country of Residence** Türkiye

Summary of research activity metrics

WoS-indexed publications:	90
Obtained international research grants:	2
Total Citation:	>4200 (Google Scholar)
h-index:	41 (Google Scholar)
Reviewed papers:	>450 (WoS)
International books (edited/authored):	2
International book chapters:	10
(Guest) edited Issues:	4
(Co)Supervised students:	7
Translated/authored books	4

Education

Degree	Major	Graduation date
B.Sc.	Applied Chemistry	9/2011
M.Sc.	Organic Chemistry	9/2013
Ph.D.	Organic Chemistry (in Catalysis field)	2/2017

Research Interest

- Nanoporous Materials; Layered materials; (Photo)(electro)catalysis; Fundamentals of catalysis.

Awards

- World`s top 2% scientists of 2021, 2022, 2023, and 2024, (According to Stanford University ranking)
- Eşik Üstü Ödülü from TÜBİTAK in 2024
- 2236 Co-funded TÜBİTAK-Horizon fellowship, 2020
- Awarding Japan Society for Promotion of Science Fellowship (JSPS), 2019

Current position

- 2023-present **Assistant Professor** (Istinye University, Istanbul, Turkey)

- 2023-Present **Visiting Fellow** (Koç University, Istanbul, Turkey)
- 2021-present **Honorary Professor** (Khazar University, Baku, Azerbaijan)

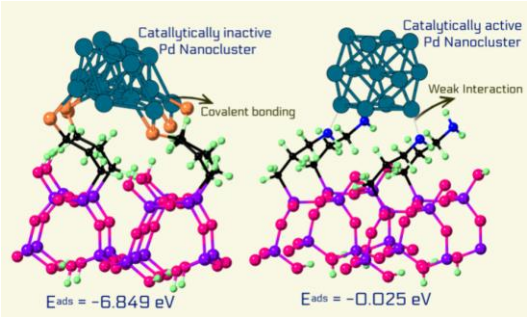
Previous Positions

- 2022-2023 **2236-Horizon 2020-TÜBITAK Research Fellow** (Koç University, Istanbul, Turkey)
- 2020 – 2022 **JSPS Fellow**
  National Institute for Materials Science (NIMS), Tsukuba, JAPAN
- 2018–2020 **Postdoctoral Researcher**
  National Institute for Materials Science (NIMS), Tsukuba, JAPAN
- 2016 –2017 **Visiting scholar and Internship**
  National Institute for Materials Science (NIMS), Tsukuba, JAPAN
- 2017-2018 **Research Fellow**
  University of Maragheh, Iran.
- 2013 –2017 **Doctor of Philosophy (Ph.D.)**
  Department of Chemistry, Urmia University, Urmia, Iran.

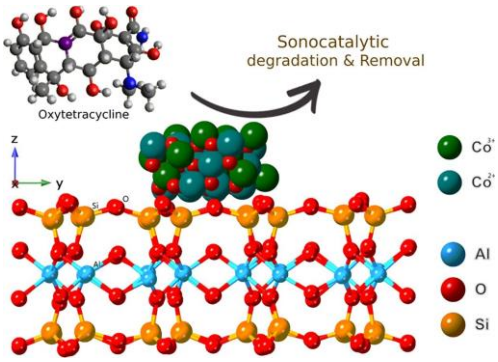
Selected Publications

2024

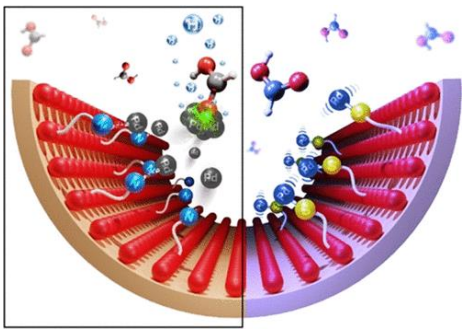
1- **E Doustkhah,*** M Yusufoglu, H El-Hosainy, H Zarenezhad, Y Ide, José Julio Gutiérrez Moreno, M Hussein N Assadi,
Title: Catalytic Synergy between Pd Nanoclusters and Ligand-Functionalized Layered Silicates for Improved Formic Acid Dehydrogenation
In: ACS Applied Materials & Interfaces, 2024, ASAP.
DOI: https://pubs.acs.org/doi/10.1021/acsami.4c13770



2- R Hassandoost, SA Hosseini, Z Movaffagh, **E Doustkhah**, A Khataee,
Title: Laterally oriented spinel Co_3O_4 on layered aluminosilicate for sonocatalytic wastewater treatment,
In: Chemical Engineering Journal, 2024, 157065.
DOI: https://doi.org/10.1016/j.cej.2024.157065

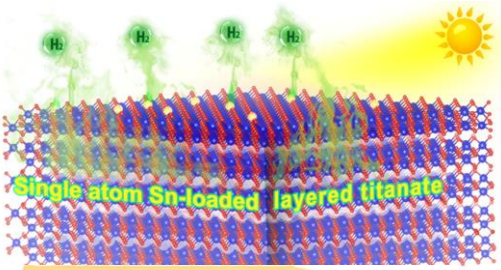


3- **E Doustkhah,*** N Tsunoji, S Mine, T Toyao, K Shimizu, T Morooka, MHN Assadi, Yusuke IDE,
Title: Feeble Single-Atom Pd Catalysts for H_2 Production from Formic Acid
In: ACS Applied Materials & Interfaces 16 (8), Page: 10251-10259
DOI: https://pubs.acs.org/doi/10.1021/acsami.3c18709

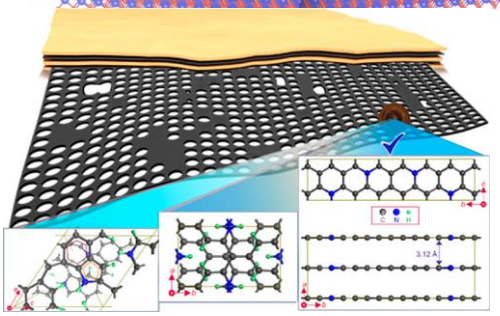


2023

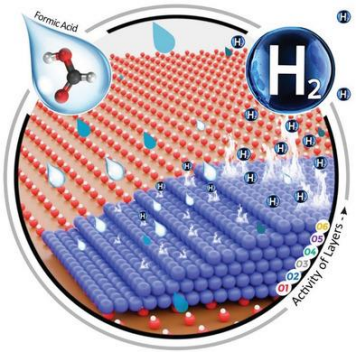
4- T Ustunel, Y Ide, S Kaya, **Esmail Doustkhah***,
Title: Single-atom Sn-loaded exfoliated layered titanate revealing enhanced photocatalytic activity in hydrogen generation,
In: *ACS Sustainable Chemistry & Engineering*, 11 (8), Page: 3306-3315.
DOI: https://doi.org/10.1021/acssuschemeng.3c00038



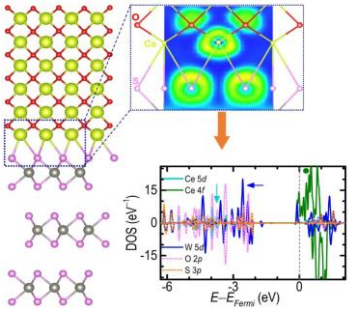
5- **Esmail Doustkhah***, A Kotb, S Tafazoli, T Balkan, S Kaya, DAH Hanaor, MHN Assadi, **Title:** Templated Synthesis of Exfoliated Porous Carbon with Dominant Graphitic Nitrogen, **In**: *ACS Materials Au*, Year: 20232023, vol. 3, Page: 231–241. (Featured as Front Cover)
DOI: https://doi.org/10.1021/acsmaterialsau.2c00074



6- **Esmail Doustkhah***, Nao Tsunoji, M Hussein N Assadi, Yusuke Ide,
Title: Pd Thickness Optimization on Silicate Sheets for Improving Catalytic Activity, *Advanced Materials Interfaces*, Year: 2023, no: 2202368. (Featured as Inside Cover)
DOI: https://doi.org/10.1002/admi.202202368

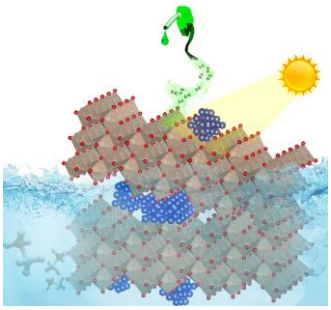


7- **Esmail Doustkhah***, R Hassandoost, NY Tizhoosh, M Esmat, O Guselnikova, MHN Assadi, A Khataee,
Title: Ultrasonically-assisted synthesis of CeO_2 within WS_2 interlayers forming type II heterojunction for a VOC photocatalytic oxidation,
In: *Ultrasonics Sonochemistry*, Year: 2023, Vol. 92, No. 106245
DOI: https://doi.org/10.1016/j.ultsonch.2022.106245

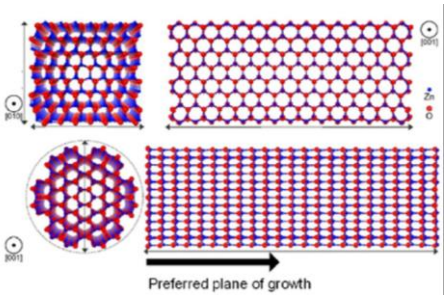


2022

8- Mohamed Esmat, **Esmail Doustkhah**, … Yusuke Ide, Naoki Fukata
Title: Structural Conversion of Cu-Titanate into Photoactive Plasmonic Cu-TiO_2 for H_2 Generation in Visible Light.
In: *ACS Sustainable Chemistry & Engineering*, Year: 2022, Vol. 10, 13, Page: 4143–4151.
DOI: https://doi.org/10.1021/acssuschemeng.1c07555



9- Esmail Doustkhah, Mohamed Esmat, Naoki Fukata, Yusuke Ide, Dorian AH Hanaor, M Hussein N Assadi
Title: MOF-derived nanocrystalline ZnO with controlled orientation and photocatalytic activity,
In: *Chemosphere*, 2022, Vol. 303, Part 1, no. 134932.
DOI: https://doi.org/10.1016/j.chemosphere.2022.134932

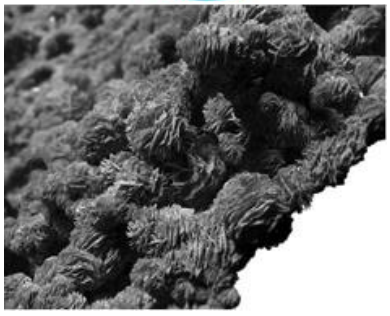


10- R Moradi, NP Khalili, NLW Septiani, CH Liu, **Esmail Doustkhah**, Y Yamauchi, Slava V. Rotkin
Nanoarchitectonics for Abused-Drug Biosensors
In: Small, 2021, vol. 18, no. 2104847
DOI: https://doi.org/10.1002/smll.202104847

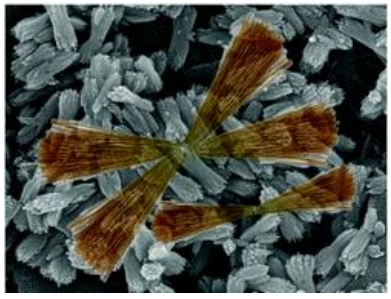
11- H El-Hosainy, S Mine, T Toyao, K Shimizu, N Tsunoji, M Esmat, ...Esmail Doustkhah, M El-Kemary, Yusuke Ide
Title: Layered silicate stabilises diiron to mimic UV-shielding TiO_2 nanoparticle
In: *Materials Today Nano*, Year: 2022, Vol: 19, no. 100227.
DOI: https://doi.org/10.1016/j.mtnano.2022.100227

12- R Hassandoost, A Kotb, Z Movafagh, M Esmat, R Guegan, S Endo, ... Yusuke Yamauchi, Yusuke Ide, **Esmail Doustkhah***
Title: Nanoarchitecturing bimetallic manganese cobaltite spinels for sonocatalytic degradation of oxytetracycline
In: Chemical Engineering Journal 431, 133851
DOI: https://doi.org/10.1016/j.cej.2021.133851

13- SS Mofarah, L Schreck, C Cazorla, X Zheng, E Adabifiroozjaei, C Tsounis, ... **Esmail Doustkhah**, Pramod Koshy, Charles C Sorrell
Title: Highly catalytically active CeO_{2-x}-based heterojunction nanostructures with mixed micro/meso-porous architectures
In: *Nanoscale*, Year: 2021, Page: 6764-6771.
DOI: https://doi.org/10.1039/D0NR08097G

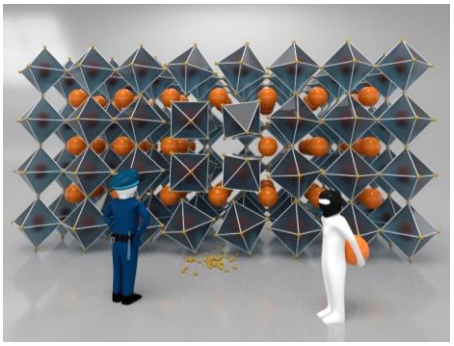


14- Durai Mani, R Tahawy, **Esmail Doustkhah,** M Shanmugam, M Arivanandhan, R Jayavel, Yusuke Ide
Title: A rutile TiO_2 nanobundle as a precursor of an efficient visible-light photocatalyst embedded with Fe_2O_3
In: *Inorg. Chem. Front.*, Year: 2021, Vol. 8, Page: 4423-4430
https://doi.org/10.1039/D1QI00565K

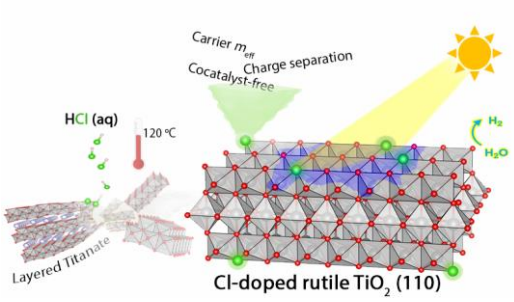


15- Esmail Doustkhah*, R Hassandoost, A Khataee, R Luque, MHN Assadi,
Title: Hard-templated synthesis of metal-organic frameworks,
In: *Chemical Society Reviews*, Year: 2021, Vol. 50 (5), Page: 2927-2953.
DOI: https://doi.org/10.1039/C9CS00813F

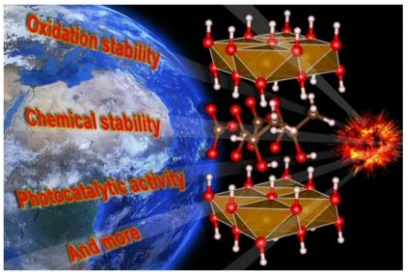
16- Hamidreza Arandiyan, Sajjad S. Mofarah, Charles C. Sorrell, **Esmail Doustkhah**, …. Thomas Maschmeyer,
Title: Defect engineering of oxide perovskites for catalysis and energy storage: synthesis of chemistry and materials science,
In: *Chemical Society Reviews*, 2021, Vol. 50 (18), Page: 10116-10211. (Featured as Front Cover)
DOI: https://doi.org/10.1039/D0CS00639D



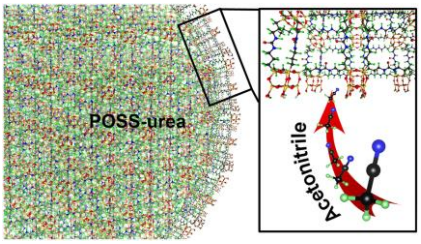
17- Esmail Doustkhah, … Yusuke Ide, **Title:** In Situ Blue Titania via Band Shape Engineering for Exceptional Solar H_2 Production in Rutile TiO_2, *Applied Catalysis B: Environmental*, Year: 2021, Vol. 297, Page: 120380.
DOI: https://doi.org/10.1016/j.apcatb.2021.120380



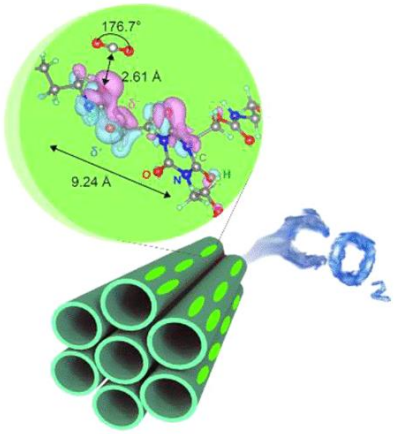
18- Rafat Tahawy, **Esmail Doustkhah**, …, Yusuke Ide,
Title: Exceptionally Stable Green Rust, a Mixed-Valent Iron-Layered Double Hydroxide, as an Efficient Solar Photocatalyst for H_2 Production from Ammonia Borane.
In: *Applied Catalysis B: Environmental*, Year: 2021, Vol. 286, Page: 119854.
DOI: https://doi.org/10.1016/j.apcatb.2020.119854



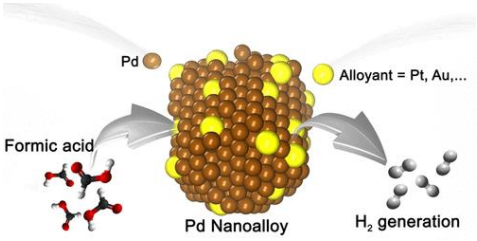
19- Esmail Doustkhah, R Tahawy, U Simon, N Tsunoji, Y Ide, DAH Hanaor, MHN Assadi
Bispropylurea bridged polysilsesquioxane: A microporous MOF-like material for molecular recognition
In: **Chemosphere**, 2021, vol 276, no. 130181.



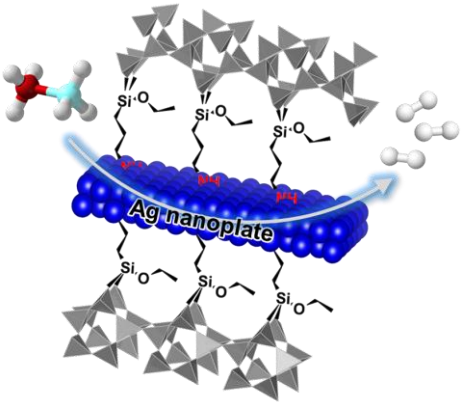
20- A Zebardasti, MG Dekamin, **Esmail Doustkhah***, MHN Assadi
Title: Carbamate-Isocyanurate-Bridged Periodic Mesoporous Organosilica for van der Waals CO_2 Capture
In: Inorganic Chemistry 59 (16), 11223-11227
DOI: https://doi.org/10.1021/acs.inorgchem.0c01449



21- **Esmail Doustkhah***, Morteza Hasani, Yusuke Ide, M. Hussein N. Assadi*
Title: Pd Nanoalloys for H_2 Generation from Formic Acid
In: *ACS Applied Nano Materials,* Year: 2020, Vol. 3, Page: 22-43.
DOI: https://doi.org/10.1021/acsanm.9b02004



22- **Esmail Doustkhah**, Sadegh Rostamnia, Nao Tsunoji, Joel Henzie, Toshiaki Takei, Yusuke Yamauchi, Yusuke Ide, Templated synthesis of atomically-thin Ag nanocrystal catalysts in the interstitial space of a layered silicate, *Chemical Communications,* Year: 2018, Vol. 54, Page: 4402-4405. Featured as Cover art.
DOI: https://doi.org/10.1039/C8CC00275D



Cover Arts

Invited Talks and Oral Presentations

- 29th Iranian Organic Chemistry Conference, Keynote Speaker, 1-3 Nov, 2023, Qom University, Iran.
- 21st ICS International Chemistry Congress (ICC 2022), Tabriz, Iran. (Invited)
- 2nd Nanotech Eurasia Conference, Khazar University, December 17-18, Baku, Azerbaijan.
- 1st Nanotech-Eurasia Conference, Khazar University, October 3-4, Baku, Azerbaijan.
- 8th Advances in Chemistry and Chemical Engineering Conference, 2018, Istanbul, Turkey
- Tabriz University (Workshop) Topic: the role of photocatalysis in daily life, May 2019, Tabriz, Iran.
- 69th Divisional Meeting of Division of Colloid and Surface Chemistry, University of Tsukuba, Tsukuba, Japan.
- Proceedings of the 2nd Iran National Zeolite Conference (2INZC) 27-28 May 2015, Tehran, Iran.

Skills and techniques

- **Synthesis techniques:**

1-Organic synthesis, 2-Synthesis of mesoporous materials, 3-Synthesis of layered materials (including layered titanate, layered silicate, g-C_3N_4, etc.), 4-Synthesis of metal-organic-frameworks (MOF), 5- Thin film fabrication

- **Equipment handling and analysis:**

1-Scanning Electron Microscopy (SEM), 2-(*In situ*) EPR spectroscopy, 3-Gas adsorption-desorption studies, 4-(*In situ*) Raman spectroscopy, 5-Atomic force microscopy (AFM) spectrometer, 6-(*In situ*) UV-Vis spectroscopy, 7-Atomic layer deposition (ALD), 8-(*In situ*) X-ray diffraction (XRD), 9-Small angle X-ray scattering (SAXS), 9-Mass spectroscopy (MS), 10-NMR spectrometer, 11-Ion beam sputtering, and chemical vapor deposition.

Organization of International conferences

- 2nd Nanotech-Eurasia Conference, December 17-18, 2021, Baku, Azerbaijan. (Role: Conference chair)
- 3rd Nanotech-Eurasia Conference, September 5-7, 2024, Istinye University, Istanbul-Turkey. (Role: Conference chair)

Attended Conferences/Workshops

- 9th Zeolite Conference, Title: Fundamentals of photocatalysis in green H_2 generation, 7-8 September 2024, **Keynote Speaker**.
- 11th Seminar on Chemistry and Environment, 27-29 August 2024, **Invited Speaker**.
- 29th Organic Chemistry Conference, Qom University, 1-3 Nov, Single atom catalysis for renewable green applications, **Keynote Speaker**.
- Webinar: Nanoart and its application in green energy carrier, IUST University, Tehran, 12 December 2021
- 21st ICS International Chemistry Congress (ICC 2022), Tabriz, Iran, **Invited Speaker**.
- 1st Nanotech-Eurasia Conference, Khazar University, October 3-4, Baku, Azerbaijan, **Invited Speaker**.
- 8th Advances in Chemistry and Chemical Engineering Conference, 2018, Istanbul, Turkey (Oral)
- Tabriz University (Workshop) Topic: the role of photocatalysis in daily life, May 2019, Tabriz, Iran.
- 69th Divisional Meeting of Division of Colloid and Surface Chemistry, University of Tsukuba, Tsukuba, Japan. (Oral)
- Proceedings of the 2nd Iran National Zeolite Conference (2INZC) 27-28 May 2015, Tehran, Iran (Oral)

Memberships and editorship activities

- BMC Chemistry, Springer, IF = 4.2, Editor
- ACS Sustainable Chemistry & Engineering; American Chemical Society, IF = 9.2, (Guest editor, 2021-2022).
- Applied Catalysis O, Elsevier; IF = 3.5, (Editor, 2022-present).
- Frontiers in Catalysis; Frontiers, (Associate Editor, 2021-present).
- Materials Today; Proceeding; Elsevier (Managing guest editor, 2021-2022).

Awarded Grants

1-JSPS Postdoctoral grant (2020-2022) (Role: PI)
Place of research: National Institute for Materials Science (NIMS), Japan
Annual fund: 2,000,000 JPY
Research title: Creation of Porous/Black Titania Nanosheet Photocatalyst by Bursting Exfoliation of Layered Titanate

2-TUBITAK-Horizon Co-fund grant (2022-2023), (Role: PI)
Place of research: Koç University, Türkiye
Annual fund: 9600 Euro
Research title: Synthesis of single atom supported layered mesoporous layered titanate black layered titanate for H_2 generation and CO_2 fixation

3-EIG CONCERT-Japan 2022, (2023-2026) (Role: PI)

Attending partners: (BSC-CNS) Spain, (RIKEN Institute) Japan, Istinye University (Türkiye)

Annual fund (only for the Turkish partner): ~30,000 USD

4-STI Joint Call for Proposals: Circular Economy & Clean, Accessible and Secure Energy Supply (2025-2027),

Title: Circular economy for waste to energy conversion: local plastic waste upcycling to multifunctional catalysts for green H_2 generation

Attending PIs: Czech Republic (FZU), Austria (TU Wiena), Türkiye (Istinye University)

Annual fund (only for the Turkish partner): ~90,000 EURO

Role: Coordinator

Supervising and mentoring activities

MSc. Degree:

-Negar Tizhoosh, 2019-2020 (co-advising), Tabriz University

-Ali Saedi, 2020-2022 (advising), Tabriz University

-Tugçe Üstünel, 2021-2023 (co-supervisor), Koç University

PhD Degree:

-Milad Behroozi, 2024-present (supervisor), Istinye University, Istanbul, Turkey

-Sepideh Sadighi, 2024-present (supervisor), Istinye University, Istanbul, Turkey

-Ali Zebardasti, 2017-2021 (advisor), Iran University of Science and Technology

-Ramin Hassandoost, 2019-2023 (co-supervisor), Tabriz University, **Selected as the top student of Iran**

-Michael Alinejad, 2019-2021 (Advisor), Urmia University

-Mohamed Esmat, 2018-2022, (co-advisor), University of Tsukuba, **Selected as top PhD graduate of the University**

Teaching experience

Istinye University, Istanbul/Turkey: (2023-present), Courses taught: Organic Chemistry I & II, General Chemistry, Pharmaceutical Chemistry, Advanced Organic Chemistry, Advanced Catalysis.

Khazar University, Azerbaijan (online): (2021-2022), Role: Honorary professor, courses taught: 1-Catalysis and Catalytic Processes, 2-Petrochemical Products, 3-Chemical Technology of Non-organic Chemistry, Kinetics and Reactions.