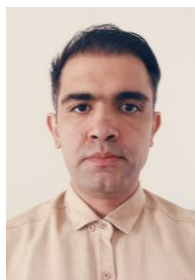


# Curriculum Vitae (CV)



- ❖ **Passport Name:** Esmail Doust Khah Heragh
- ❖ **Name in publications** Esmail Doustkhah
- ❖ **Birthdate:** 20/08/1989
- ❖ **Email:** Esmail.Doustkhah@istinye.edu.tr
- ❖ **Telephone:** (+90)538-898-7994
- ❖ **Website:** www.PhotoElectroCatalysis.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:	87
Obtained international research grants:	2
Total Citation:	>4000 (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; 2D layered materials; (Photo)(electro)catalysis; Fundamentals of catalysis.

## Awards

- ❖ World's top 2% scientists of 2021, 2022, and 2023 (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)

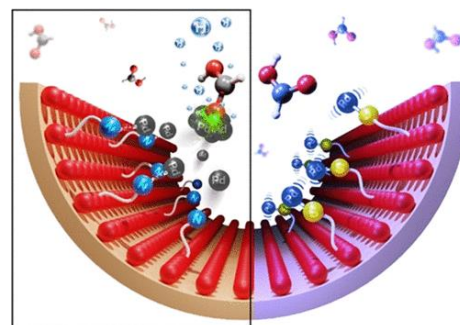
## Previous Positions

- † 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

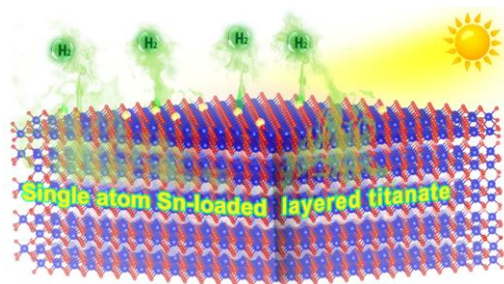
**2024**

1- **E Doustkhah**, N Tsunoji, S Mine, T Toyao, K Shimizu, T Morooka, MHN Assadi, Yusuke IDE,  
**Title:** Feeble Single-Atom Pd Catalysts for H<sub>2</sub> Production from Formic Acid  
**In:** ACS Applied Materials & Interfaces 16 (8), Page: 10251-10259



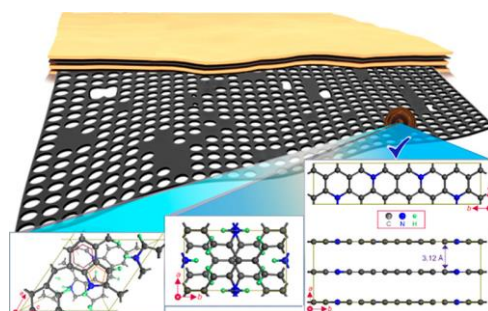
**2023**

2- 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>



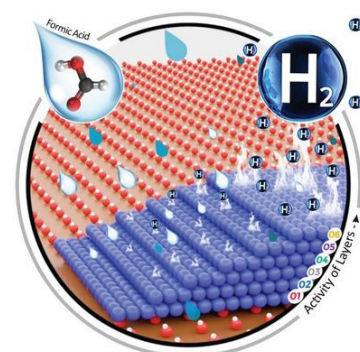
3- **Esmail Doustkhah\***, A Kotb, S Tafazoli, T Balkan, S Kaya, DAH Hanaor, MHN Assadi, **Title:** Templated Synthesis of Exfoliated Porous Carbon with Dominant Graphitic Nitrogen,  
**In:** ACS Materials Au, Year: 2023, vol. 3, Page: 231–241.  
 (Featured as Front Cover)

**DOI:** <https://doi.org/10.1021/acsmaterialsau.2c00074>



4- **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>

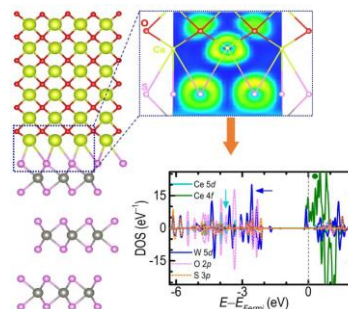


5- **Esmail Doustkhah\***, R Hassandoost, NY Tizhoosh, M Esmat, O Guselnikova, MHN Assadi, A Khataee,

**Title:** Ultrasonically-assisted synthesis of CeO<sub>2</sub> within WS<sub>2</sub> 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>



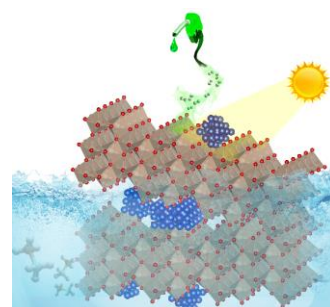
2022

6-Mohamed Esmat, **Esmail Doustkhah**, ... Yusuke Ide, Naoki Fukata

**Title:** Structural Conversion of Cu-Titanate into Photoactive Plasmonic Cu-TiO<sub>2</sub> for H<sub>2</sub> 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>

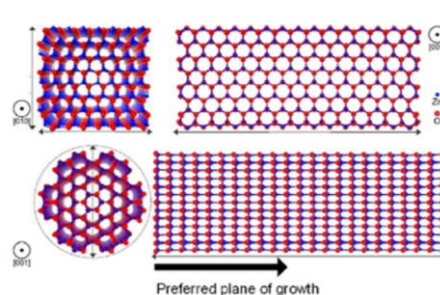


7-Esmail Doustkhah, Mohamed Esmat, Naoki Fukata, Yusuke Ide, Dorian AH Hanaor, M Hussein N Assadi

**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>



8-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>

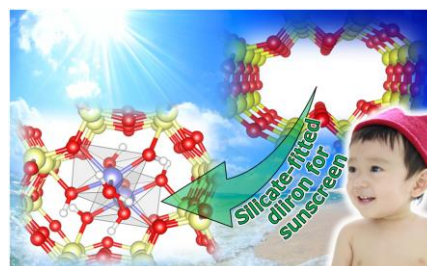


9-H El-Hosainy, S Mine, T Toyao, K Shimizu, N Tsunoji, M Esmat, ...Esmail Doustkhah, M El-Kemary, Yusuke Ide

**Title:** Layered silicate stabilises diiron to mimic UV-shielding TiO<sub>2</sub> nanoparticle

**In:** *Materials Today Nano*, Year: 2022, Vol: 19, no. 100227.

**DOI:** <https://doi.org/10.1016/j.mtnano.2022.100227>

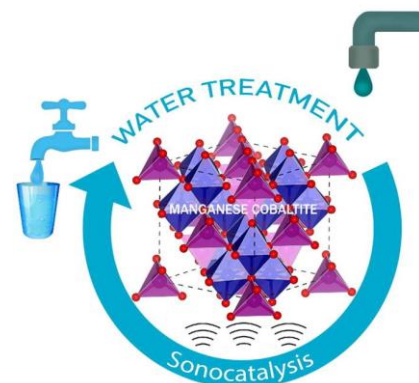


10-R Hassandoost, A Kotb, Z Movafagh, M Esmat, R Guegan, S Endo, ... Yusuke Yamauchi, Yusuke Ide, **Esmail Doustkhah\***

**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>



11-SS Mofarah, L Schreck, C Cazorla, X Zheng, E Adabifiroozjaei, C Tsounis, ..... **Esmail Doustkhah**, Pramod Koshy, Charles C Sorrell

**Title:** Highly catalytically active CeO<sub>2-x</sub>-based heterojunction nanostructures with mixed micro/meso-porous architectures

**In:** *Nanoscale*, Year: 2021, Page: 6764-6771.

**DOI:** <https://doi.org/10.1039/D0NR08097G>

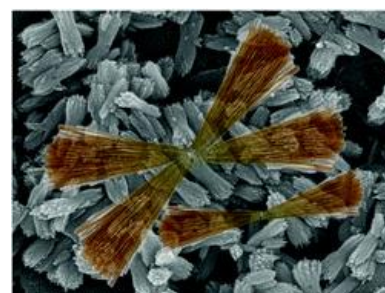


12- Durai Mani, R Tahawy, **Esmail Doustkhah**, M Shanmugam, M Arivanandhan, R Jayavel, Yusuke Ide

**Title:** A rutile TiO<sub>2</sub> nanobundle as a precursor of an efficient visible-light photocatalyst embedded with Fe<sub>2</sub>O<sub>3</sub>

**In:** *Inorg. Chem. Front.*, Year: 2021, Vol. 8, Page: 4423-4430

<https://doi.org/10.1039/D1QI00565K>



13- **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>



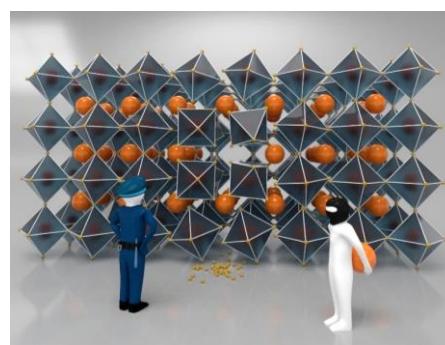
14-Hamidreza Arandiyan, Sajjad S. Mofarah, Charles C. Sorrell, **Esmail Doustkhah**, .... Thomas Maschmeyer,

**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.

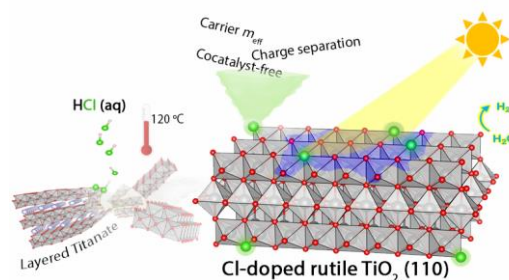
(Featured as Front Cover)

**DOI:** <https://doi.org/10.1039/D0CS00639D>



15- **Esmail Doustkhah**, ... Yusuke Ide, **Title:** In Situ Blue Titania via Band Shape Engineering for Exceptional Solar H<sub>2</sub> Production in Rutile TiO<sub>2</sub>, *Applied Catalysis B: Environmental*, Year: 2021, Vol. 297, Page: 120380.

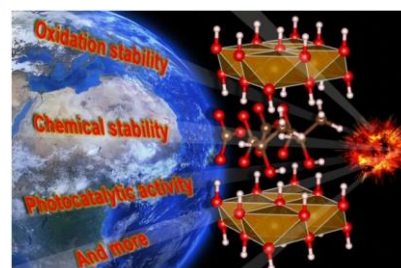
**DOI:** <https://doi.org/10.1016/j.apcatb.2021.120380>



16- 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<sub>2</sub> Production from Ammonia Borane.

**In:** *Applied Catalysis B: Environmental*, Year: 2021, Vol. 286, Page: 119854.

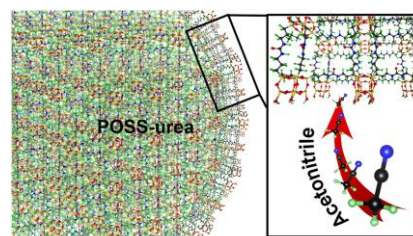
**DOI:** <https://doi.org/10.1016/j.apcatb.2020.119854>



17-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

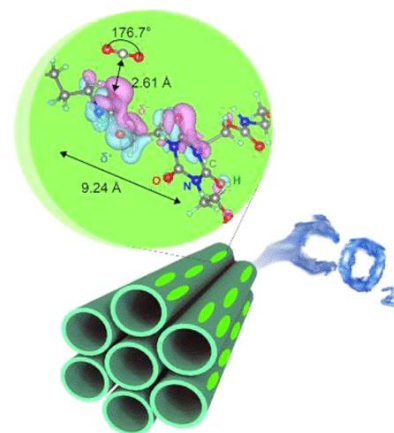
**In:** *Chemosphere*, 2021, vol 276, no. 130181.



18-A Zebardasti, MG Dekamin, **Esmail Doustkhah\***, MHN Assadi **Title:** Carbamate-Isocyanurate-Bridged Periodic Mesoporous Organosilica for van der Waals CO<sub>2</sub> Capture

**In:** *Inorganic Chemistry* 59 (16), 11223-11227

**DOI:** <https://doi.org/10.1021/acs.inorgchem.0c01449>



19-**Esmail Doustkhah\***, Morteza Hasani, Yusuke Ide, M. Hussein N. Assadi\*

**Title:** Pd Nanoalloys for H<sub>2</sub> Generation from Formic Acid

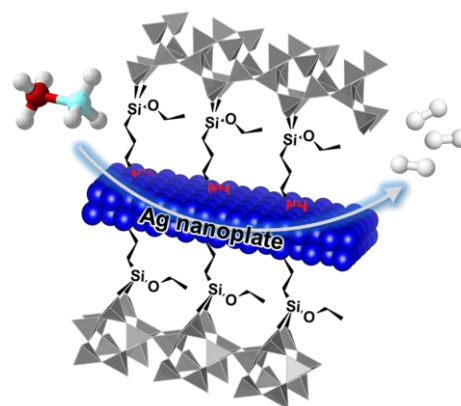
**In:** *ACS Applied Nano Materials*, Year: 2020, Vol. 3, Page: 22-43.

**DOI:** <https://doi.org/10.1021/acsnm.9b02004>



20-**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

- ❖ 29<sup>th</sup> Iranian Organic Chemistry Conference, Keynote Speaker, 1-3 Nov, 2023, Qom University, Iran.
- ❖ 21<sup>st</sup> ICS International Chemistry Congress (ICC 2022), Tabriz, Iran. (Invited)
- ❖ 2<sup>nd</sup> Nanotech Eurasia Conference, Khazar University, December 17-18, Baku, Azerbaijan.
- ❖ 1<sup>st</sup> Nanotech-Eurasia Conference, Khazar University, October 3-4, Baku, Azerbaijan.
- ❖ 8<sup>th</sup> 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.
- ❖ 69<sup>th</sup> Divisional Meeting of Division of Colloid and Surface Chemistry, University of Tsukuba, Tsukuba, Japan.
- ❖ Proceedings of the 2<sup>nd</sup> 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<sub>3</sub>N<sub>4</sub>, 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

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

### Attended Conferences/Workshops

- ❖ 9<sup>th</sup> Zeolite Conference, Title: Fundamentals of photocatalysis in green H<sub>2</sub> generation, 7-8 September 2024, **Keynote Speaker**.
- ❖ 11<sup>th</sup> Seminar on Chemistry and Environment, 27-29 August 2024, **Invited Speaker**.
- ❖ 29<sup>th</sup> 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
- ❖ 21<sup>st</sup> ICS International Chemistry Congress (ICC 2022), Tabriz, Iran, **Invited Speaker**.
- ❖ 1<sup>st</sup> Nanotech-Eurasia Conference, Khazar University, October 3-4, Baku, Azerbaijan, **Invited Speaker**.
- ❖ 8<sup>th</sup> 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.
- ❖ 69<sup>th</sup> Divisional Meeting of Division of Colloid and Surface Chemistry, University of Tsukuba, Tsukuba, Japan. (Oral)
- ❖ Proceedings of the 2<sup>nd</sup> 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<sub>2</sub> generation and CO<sub>2</sub> fixation

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

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

Annual fund (only for the Turkish partner): ~20,000 Euro

### 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 Behrooz, 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.

### References

- Prof. Sarp Kaya, Koç University, Turkey, Email: [sarpkaya@ku.edu.tr](mailto:sarpkaya@ku.edu.tr)
- Prof. Yusuke Ide, National Institute for Materials Science (NIMS), Japan, Email: [Ide.yusuke@nims.go.jp](mailto:Ide.yusuke@nims.go.jp)
- Prof. Yusuke Yamauchi, University of Queensland, Australia, Email: [y.yamauchi@uq.edu.au](mailto:y.yamauchi@uq.edu.au)
- Dr. Hussein Assadi, RIKEN Institute, Tokyo, Japan; Email: [mohammad.alassadi@riken.jp](mailto:mohammad.alassadi@riken.jp).