



CURRICULUM VITAE

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UNAM-National Nanotechnology Research Center
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1. PERSONAL DATA

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Google Scholar: <https://scholar.google.com.tr/citations?user=Mpk-HKwAAAAJ&hl=en>
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2. EDUCATION

- **PhD, Applied Chemistry**, (2012-2016), Semnan University, Semnan, Iran.

GPA: 19.60 out of 20 (graduated with honor degrees, graduated Top First in the class of Applied Chemistry).

PhD Dissertation: Application of natural adsorbents and synthetic nanoadsorbents of graphene-based and nanocarbon materials for removal, extraction and preconcentration of contaminants from aqueous solutions.

Advisor: Prof. Dr. S. Hassan Zavvar Mousavi

Co-advisors: Prof. Dr. Alimorad Rashidi/ Dr. Hamid Shir Khanloo

- **MSc, Applied Chemistry**, (2006-2009), University of Tabriz, Tabriz, Iran.

GPA: 17.24 out of 20.

Thesis: Optimization of synthesis and curing conditions of ortho-phthalic unsaturated polyester resin and preparation of its composite with polyurethane.

Advisor: Prof. Dr. Abdolreza Mirmohseni

- **BSc, Applied Chemistry**, (2002-2006), Azad University, Iran.

GPA: 18.81 out of 20, (graduated with honor degrees, graduated Top First in the class of Applied Chemistry).

3. RESEARCH EXPERIENCE

● **Postdoctoral Researcher**, (August 2017 – present)

Institute of Materials Science and Nanotechnology, National Nanotechnology Research Center (UNAM), Department of Chemistry, Bilkent University, Ankara, Turkey.

Supervisor: Prof. Dr. Dönüs Tuncel

Project: The design, synthesis and characterization of supramolecular drug delivery systems and investigation of their drug loading capacity and release profile.

● **Research Assistant**, (02/2016- 06/2017)

Department of Applied Chemistry, Semnan University, Semnan, Iran.

Project: Synthesis, functionalization and characterization of nanoporous graphene for preconcentration/extraction and removal of heavy metal ions in water and biological samples.

● **Research Assistant**, (12/2013- 06/2015)

Nanotechnology Research Center, Research Institute of Petroleum Industry, Tehran, Iran.

Supervisor: Prof. Alimorad Rashidi

Project: Synthesis and characterization of novel carbon based nanomaterials for water purification.

4. TEACHING EXPERIENCE

- Operations of Chemical Engineering, @ Semnan University, (Spring 2017), Level: BSc.
- Transport Phenomena, @ Semnan University, (Spring 2017), Level: BSc.
- General Chemistry 2, @ Semnan University, (Spring 2016), Level: BSc.
- Mass and Energy Balance, @ Semnan University, (Fall 2015), Level: BSc.
- Basic Principles and Calculations in Chemical Engineering state, @ Semnan University, (09/2012-05/2015), Level: BSc.
- Industrial Chemistry 1, @ Semnan University, (09/2012- 05/2017), Level: BSc.
- Industrial Chemistry 2, @ Semnan University, (02/2012-05/2014), Level: BSc.
- Water and Wastewater Treatment Methods, @ Semnan University, (Spring 2014), Level: BSc.
- Organic Chemistry Laboratory, @ Azad University, (Fall 2011), Level: BSc.

5. GRADUATE STUDENT CO-ADVISING RECORD

Students Full Name*	Degree	Major	Date	Title
Farshad Mahmoodi	PhD	Analytical Chemistry	06/2016-09/2018	Removal and extraction of organic and inorganic contaminants from aqueous solutions using activated carbon ...
Navid Noorbakhsh	PhD	Applied Chemistry	06/2016-09/2018	Determination and removal of heavy metals from water and industrial wastewater using nano-adsorbents ...
Mahya Talebi	MS	Analytical Chemistry	06/2016-09/2017	Application of Tribulus terrestris plant as low-cost adsorbent for ...
Zahra Rostamian	MS	Applied Chemistry	06/2016-09/2017	Removal of cadmium (II) and cobalt (II) metal ions from contaminated aqueous solution using ...

*@Semnan University, Iran.

6. RESEARCH INTERESTS:

Specialties and expertise:

- ❖ Synthesis, Functionalization and Characterization of: Carbon Nanomaterials, Graphene, Mesoporous Silica Nanoparticles, Supramolecular Systems, Covalent organic frameworks, and Engineering Polymers via modern synthetic methodologies.
- ❖ Application Fields: Photodynamic Therapy, Electrophotocatalytic Hydrogen Generation from Water Splitting, Water and Wastewater Treatment, Trace Element Analysis, SPE and μ SPE determination of heavy metal ions in water and biological samples, Dye and Heavy Metal ions removal from wastewater, Coating Materials, etc.

①- Synthesis and characterization of supramolecular systems:

- Porphyrine-cucurbit[n]uril covalent organic frameworks
- Rotaxanes and Polyrotaxenes
- Direct functionalization of cucurbit[n]urils.

②-Synthesis, functionalization and characterization of carbon nanomaterials and mesoporous NPs via chemical and CVD methods:

- *Graphene-based nanomaterials*
- *Graphene-Activated carbon nanocomposite*
- *Graphene oxide*
- *N-doped graphene*
- *Nanoporous activated carbons from natural sources*
- *Mesoporous silica nanoparticles & UVM-7*

③-Synthesis and characterization of engineering polymers and composites:

- *Unsaturated polyester resin*
- *Polyurethane*
- *Epoxy resin*

7. SKILLS:

A. Operation and data interpretation:

- Mass spectroscopy (TOF/HRMS, QTOF/HRMS and TOFLCMS/MALDI)
- XRD
- SEM
- XPS
- BET
- EDX
- TGA
- Raman
- ¹H-NMR
- ¹³C-NMR
- ZP (zeta potential)
- DLS (dynamic light scattering)
- FT-IR
- CHNS analysis
- UV-Vis spectroscopy
- Shore Durometer
- Tensile Testing
- Compression Testing
- Adhesion Testing
- Scratch Resistance

B. Technical and IT skills:

- Origin
- ChemDraw
- MestReNOva
- Mini-Tab
- Microsoft Office

8. PUBLICATIONS:

A. Selected journal papers:

Aisan Khaligh (<https://scholar.google.com.tr/citations?user=Mpk-HKwAAAAJ&hl=en>)

(as of 07 April 2021)

of published papers: 29

Citations: 233, h-index: 9, i10-index: 8

14. A. Khaligh, Y. Sheidaei, D. Tuncel, Covalent Organic Framework Constructed by Clicking Azido Porphyrin with Perpropargyloxy-Cucurbit[6]uril for Electrocatalytic Hydrogen Generation from Water Splitting, *ACS Appl. Energy Mater.* **2021**, accepted.

13. **A. Khaligh**, R. Khan, M. Özkan, D. D. Akolpoğlu Başaran, D. Tuncel, Photoactive catalytically self-threaded 2D-polyrotaxane network for visible light activated antimicrobial phototherapy, *ACS Appl. Polym. Mater.* 2 (2020) 5726-5734.
12. Y. Kumar, B. Patil, **A. Khaligh**, S.E. Hadi, T. Uyar, D. Tuncel, Novel Supramolecular Photocatalyst Based on Conjugation of Cucurbit[7]uril to Non-Metallated Porphyrin for Electrophotocatalytic Hydrogen Generation from Water Splitting, *ChemCatChem*, 11 (2019) 2994-2999 (As Journal cover).
11. R. Khan, M. Ozkan, **A. Khaligh**, D. Tuncel, Water-dispersible glycosylated poly(2,5'-thienylene)porphyrin-based nanoparticles for antibacterial photodynamic therapy, *Photochemistry and Photobiological Sciences*, 18 (2019) 1147-1155.
10. F. Mahmoudi, H. Zavvar Mousavi, **A. Khaligh**, Filter-Based Low-Toxic Emulsification Microextraction Followed by High-Performance Liquid Chromatography for Determination of Sudan Dyes in Foodstuff Samples”, *Food Analytical Methods*, (2018) 1-9.
9. **A. Khaligh**, H. Zavvar Mousavi, A. Rashidi, H. Shirkhanloo, “Nitrogen-modified nanoporous activated carbon from eucalyptus leaves for ultrasound-assisted removal of basic dyes using derivative spectrophotometric method”, *Journal of the Serbian Chemical Society*, 82 (2017) 1-18.
8. H. Shirkhanloo, **A. Khaligh**, H.Z. Mousavi, A. Rashidi, “Ultrasound assisted-dispersive-ionic liquid-micro-solid phase extraction based on carboxyl-functionalized nanoporous graphene for speciation and determination of trace inorganic and organic mercury species in water and caprine blood samples”, *Microchemical Journal*, 130 (2017) 245-254.
7. **A. Khaligh**, H.Z. Mousavi, A. Rashidi, “Ultrasonic assisted removal of Ni(II) and Co(II) ions from aqueous solutions by carboxylated nanoporous graphene”, *Journal of Applied Chemistry*, 11 (2017) 49-58.
6. H. Shirkhanloo, **A. Khaligh**, H.Z. Mousavi, A. Rashidi, “Ultrasound assisted-dispersive-micro-solid phase extraction based on bulky amino bimodal mesoporous silica nanoparticles for speciation of trace manganese (II)/(VII) ions in water samples”, *Microchemical Journal*, 124 (2016) 637-645.
5. **A. Khaligh**, H.Z. Mousavi, H. Shirkhanloo, A. Rashidi, “Speciation and determination of inorganic arsenic species in water and biological samples by ultrasound assisted-dispersive-micro-solid phase extraction on carboxylated nanoporous graphene coupled with flow injection-hydride generation atomic absorption spectrometry”, *RSC Advances*, 5 (2015) 93347.
4. H. Shirkhanloo, **A. Khaligh**, H.Z. Mousavi, A. Rashidi, “Graphene oxide-packed micro-column solid-phase extraction combined with flame atomic absorption spectrometry for determination of lead (II) and nickel (II) in water samples”, *International Journal of Environmental Analytical Chemistry*, 95 (2015) 16-32.
3. H. Shirkhanloo, **A. Khaligh**, H.Z. Mousavi, M.M. Eskandari, A.A. Miran-Beigi, “Ultra-trace arsenic and mercury speciation and determination in blood samples by ionic liquid-based dispersive liquid-liquid microextraction combined with flow injection-hydride generation/cold vapor atomic absorption spectroscopy”, *Chemical Papers*, 69 (2015) 779-790.
2. H. Shirkhanloo, **A. Khaligh**, F. Golbabaie, Z. Sadeghi, A. Vahid, A. Rashidi, “On-line micro column preconcentration system based on amino bimodal mesoporous silica nanoparticles as a novel adsorbent for removal and speciation of chromium (III, VI) in environmental samples”, *Journal of Environmental Health Science and Engineering*, 13 (2015) 47.

1. H.Z. Mousavi, **A. Khaligh**, M. Behzad, J. Rahchamani, "Application of polyacrylamide for methylene blue removal from aqueous solutions", *Journal of Applied Solution Chemistry and Modeling*, 3 (2014) 39-47.

- for other publications please see my google scholar profile.

B. Patents:

A. Mirmohseni, **A. Khaligh**, "Optimization of synthesis conditions of ortho-phthalic unsaturated polyester resin", Iran patent, Patent No. 74976, 8 May (2012).

C. Book Chapter:

A. Khaligh, D. Tuncel, Cucurbituril-assisted supramolecular polymeric hydrogels, in cucurbituril-based Functional Materials (Smart Materials Series), edited by Donus Tucel. (eds), Chapter 6, August 2019, RSC, ISBN-13: 978-1788014885.

D. Book:

A. Khaligh, H. Shirkhanloo, (2017), "The role of nanoparticles in novel drug delivery systems, targeted diagnosis and treatment of diseases", Tehran: Iranian Petroleum Industry Health Research Institute (IPIHRI), ISBN 978-600-333-288-1 (Book language: Persian).

E. Oral / Poster Presentations at National/International Conferences:

1. **A. Khaligh**, H. Z. Mousavi, A. Rashidi, "Ultrasonic assisted removal of Cd (II) ions from aqueous solutions by carboxylated nanoporous graphene", *2nd International Conference on New Research Achievements in Chemistry and Chemical Engineering*, AmirKabir University of Technology, Tehran, Iran, 05 May (2016, **Poster**).
2. H. Z. Mousavi, **A. Khaligh**, H. Shirkhanloo, A. Rashidi, "Speciation of inorganic arsenic in water samples using ultrasound assisted-dispersive-micro-solid phase extraction based on carboxylated nanoporous graphene", *18th Iranian Chemistry Congress*, Semnan University, Semnan, Iran, 30 Aug. (2015, **Poster**).
3. **A. Khaligh**, H. Z. Mousavi, A. Rashidi, H. Shirkhanloo, S. M. Sajjadi, "Agricultural waste-based microporous activated carbon modified with amine functional groups for removal of Cd (II) and Ni (II) ions from aqueous solutions", *18th Iranian Chemistry Congress*, Semnan University, Semnan, Iran, 30 Aug. (2015, **Poster**).
4. H. Z. Mousavi, **A. Khaligh**, "Removal of Cd (II), Co (II) and Ni (II) ions from aqueous solutions using eucalyptus leaves ash", *6th Iranian National Seminar of Chemistry and the Environment*, Tabriz University, Tabriz, Iran, 28-30 Oct. (2013, **Poster**).

5. A. Mirmohseni, **A. Khaligh**, "Optimization of synthesis and curing conditions of ortho-phthalic unsaturated polyester resin", *32th Australian Polymer Symposium*, Coffs Harbour, NSW, Australia, 13-16 Feb. (2011, Oral).

9. ACADEMIC AND FESTIVAL AWARDS:

- 2016**, Ranked 1st with highest GPA in Chemistry department (2012-2016 Academic Years), Semnan University, Semnan, Iran.
- 2014**, Distinguished researcher of Tabriz HiTECH Exhibition, Tabriz, Iran.
- 2015**, Distinguished researcher of Iranian Festival of Premier Innovations in Oil, Gas, and Petrochemical Industries, Persian Gulf Science & Technology Park, Iran.
- 2012**, Distinguished researcher of the second innovation exhibition at Semnan University, Semnan, Iran.
- 2005**, Ranked 1st with highest GPA in Chemistry department (2002-2005 Academic Years), Azad University, Tabriz, Iran.

10. SCIENTIFIC COOPERATIONS:

- 2014–2016**, Editorial Board Member (Guest Editor), Journal of Applied Solution Chemistry and Modeling (<https://www.lifescienceglobal.com/journals/journal-of-applied-solution-chemistry-and-modeling>).
- 2016–present**, Editorial Board Member, Annals of Chromatography and Separation Techniques (<https://smjournals.com/chromatography/editorial-board.php>).
- 2018–present**, Editorial Board Member, Analytical Methods in Environmental Chemistry Journal (<http://www.amecj.com/about-us/board-members/advisory-board>).
- 2015–present**, Reviewer, Journal of Pollution Effects & Control (<https://www.omicsonline.org/reviewer-profile>).
- 2016–present**, Reviewer, Journal of Applied Chemistry (<http://chemistry.journals.semnan.ac.ir/>).
- 2016**, Referees Committee, 3^{ed} International Conference on New Research Achievements in Chemistry and Chemical Engineering, Iran.
- 2016**, Referees Committee, 2^{ed} International Conference on New Research Achievements in Chemistry and Chemical Engineering, Iran.