CURRICULUM VITAE

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First Name: Seyed Heydar

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Date of Birth: 1/3/1971

Married (2 Child)

EDUCATION

- PhD: Organic Chemistry, University of Tehran, Tehran, Iran (2001)
  Thesis: *Studying of some of the Pericyclic Reactions in the Presence of Zeolite Y*
- MSc: Organic Chemistry, University of Tehran, Tehran, Iran (1995)
  Thesis: *The Photocycloaddition reaction of Diphenylcyclopropenone with Norbornadiene*
- BSc: In Applied Chemistry, Isfahan University of Technology, Isfahan, Iran (1992)

PROFESSIONAL EXPERIENCE

- Associate Professor, Iranian Research Organization for Science and Technology (IROST), Department of Chemical Technology (2001-now)

EXECUTIVE EXPERIENCE

- Deputy of Administrative and Logistic Affairs, IROST (2019-2022)
- Head of Technology Support and Knowledge Management Office, IROST (2016-2018)
- Deputy of Department of Chemical Technology, IROST (2011-2013) and (2014-2016).
- Head of Department of Chemical Technology, IROST (2006-2008)
- Dean of Higher Education Office, IROST (2008-2010)

- Member of Chemical Industries Scientific Committees for Khwarizmi International Award (2002-2008, 2010, 2014-2020)
- Member of Scientific Committees in Department of Chemical Industries (DCI), IROST (2002-2008, 2010, 2014-2016)
- Member of Scientific Committees for Institute of Advanced Technologies (IAT), IROST (2006-2008)
- Head of Organic Chemistry and Polymer Department, Department of Chemical Technology, IROST (2002-2004)

PUBLICATIONS

1. Journal Papers

- S. Torkaman, **S. H. Mahmoudi Najafi**, A. Ashori, F. Aziz Mohseni, "Chemoselective modification of chitosan with arginine and hydroxyproline: Development of antibacterial composite films for wound healing applications", *International Journal of Biological Macromolecules* (2024) 282(Part 3), 137081.
- A. Ashori, **S. H. Mahmoudi Najafi**, V. Heydari, K. Besharatifar, H. Sharifi Taskouh, D. Maghsoodi, "Utilizing de-inked paper sludge for sustainable production of medium-density fiberboard: A comprehensive study", *Polymer Composites* (2024) 45, 6359-6373.
- Z. Norouzi, **S. H. Mahmoudi Najafi**, S. A. Mozaffari, "Highly ordered nanoporous β-$Ni(OH)_2$ nanobelt array architectures as electrode material for electrochemical capacitors: Design, synthesis, characterization and supercapacitive evaluation", *Hydrogen, Fuel Cell & Energy Storage* (2023) 10(2), 157-171.
- Z. Norouzi, **S. H. Mahmoudi Najafi**, S. A. Mozaffari, "Facile One-pot Synthesis of Binder-free $MnCo_2O_4$ Nanosheets as Efficient Supercapacitor Electrode Material", *Progress in Color, Colorants and Coatings* (2023) 16(3), 271-281.
- Z. Norouzi, S. A. Mozaffari, **S. H. Mahmoudi Najafi**, "Three-dimensional unified electrode design using CuO embedded MnO_2 nano-dandelions@$Ni(OH)_2$ nanoflakes as electrode material for high-performance supercapacitors", *Journal of Alloys and Compounds* (2023) 938, 168603.
- Z. Norouzi, **S. H. Mahmoudi Najafi**, S.A. Mozaffari, "Silver-loaded carbon sphere-in-rod 3D nano-architectures as electrode material for supercapacitors", *Diamond and Related Materials* (2022) 121, 108734.

- S. Torkaman, H. Rahmani, A. Ashori, **S. H. Mahmoudi Najafi**, "Modification of chitosan using amino acids for wound healing purposes: A review", *Carbohydrate Polymers* (2021) 258, 117675.
- S. A. Mozaffari, **S. H. Mahmoudi Najafi**, Z. Norouzi, "Hierarchical NiO@Ni(OH)$_2$ nano-arrays as high-performance supercapacitor electrode material", *Electrochimica. Acta* (2021) 368, 137633.
- H. Rahmani, **S. H. Mahmoudi Najafi**, A. Ashori, M. Arab Fashapoyeh, F. Aziz Mohseni, S. Torkaman, "Preparation of chitosan-based composites with urethane cross linkage and evaluation of their properties for using as wound healing dressing", *Carbohydrate Polymers* (2020) 230, 115606.
- R. Kheyrabadi, H. Rahmani, **S. H. Mahmoudi Najafi**, "Flame-retardant halogen-free polymers using phosphorylated hexaglycidyl epoxy resin", *High Performance Polymers* (2018) 30(2), 202-210.
- M. Ranjbar, M. Yousefi, M. Lahooti, **S. H. Mahmoudi Najafi**, A. Malekzadeh, "Synthesis of pure monoclinic zirconia nanoparticles using ultrasound cavitation technique", *Journal of Particle Science and Technology* (2016) 2(2), 69-77.
- **S. H. Mahmoudi Najafi**, M. Baghaei, A. Ashori, "Preparation and characterization of acetylated starch nanoparticles asdrug carrier: Ciprofloxacin as a model", *International Journal of Biological Macromolecules* (2016) 87, 48-54.
- H. Rahmani, **S. H. Mahmoudi Najafi**, A. Ashori, M. Golriz, "Elastic Properties of Carbon Fibre-Reinforced Epoxy Composites", *Polymers and Polymer Composites* (2015) 23(7), 475-481.
- H. Rahmani, **S. H. Mahmoudi Najafi**, S. Saffarzadeh-Matin, A. Ashori, "Mechanical Properties of Carbon Fiber/Epoxy Composites: Effects of Number of Plies, Fiber Contents, and Angle-Ply Layers", *Polymer Engineering and Science* (2014), 54(11), 2676-2682.
- H. Rahmani, **S. H. Mahmoudi Najafi**, A. Ashori, "Mechanical performance of epoxy/carbon fiber laminated composites", *Journal of Reinforced Plastics and Composites* (2014) 33(8), 733-740.
- M. Ranjbar, O. Celik, **H. Mahmoudi Najafi**, S. Sheshmani, N. Akbari, "Synthesis of Lead(II) Minoxidil Coordination Polymer : A New Precursor for Lead(II) Oxide and Lead(II) Hydroxyl Bromide", *Journal of Inorganic and Organometallic Polymers and Materials* (2012) 22(4), 837-844.

- M. Ranjbar, **H. Mahmoudi Najafi**, N. Shahsavan, M. Yousefi, "Synthesis of Zinc(II) Oxide Wurtzite Nano Crystals Via Zn(II) Minoxidil Nanocomposite as a New Precursor", *International Journal of Nanoscience and Nanotechnology* (2011) 7(3), 147-152.

- M. Ranjbar, **S. H. Mahmoudi Najafi**, and SW Ng, "Catena-Poly[lead(II)-[μ-2,4-diamino- 6-(piperidin-1-yl)pyrimidine N-oxide-κ^2O:O]di-μ-iodido]", *Acta Crystallographica Section E: Structure Reports Online* (2009) E65, m749.

- G. Mashayekhi, M. Ghandi, F. Farzaneh, M. Shahidzadeh, **H. Mahmoudi Najafi**, "Experimental and semi-empirical studies of effect of MCM-41 and cation exchanged zeolite Y on rate enhancement and diastereoselectivity of Diels–Alder reaction of *p*-benzoquinone and some derivatives with cyclopentadiene", *Journal of Molecular Catalysis A: Chemical* (2006) 264, 220-226.

- **H. Mahmoudi Najafi**, M. Ghandi, F. Farzaneh, "A Simple Route to Selective Diels-Alder Reactions Using Modified Zeolite Y", *Chemistry Letters* (2000) 29(4), 358-359.

- R. Sadeghpoor, M. Ghandi, **H. Mahmoudi Najafi**, F. Farzaneh, "The Oxa-Di-π-Methane Rearrangement of β,γ-Unsaturated Ketones Induced by the External Heavy Atom Cation Effect within a Zeolite", *Journal of Chemical Society, Chemical Communications* (1998) 329-330.

2. Congress Papers

- S. Torkaman, A. Ashori, **S. H. Mahmoudi Najafi**, "Optimizing Tensile Strength and Flexibility in Eco-friendly Chitosan Biocomposites Using Glutamic Acid as Crosslinking Agent", 22nd Iranian Chemistry Congress (ICC22), Tehran, Iran, May 2024.
- S. Torkaman, **S. H. Mahmoudi Najafi**, A. Ashori, "Modifying Chitosan with Arginine Peptides to Prepare Novel Nanocomposites for Biomedical Applications", 22nd Iranian Chemistry Congress (ICC22), Tehran, Iran, May 2024.

- Z. Norouzi, **S. H. Mahmoudi Najafi**, S.A. Mozaffari, "Facile One-pot Synthesis of $Ni(OH)_2$ Nanosheets Through a Solvent-free Reaction as an Efficient Supercapacitor Electrode Material", 8th International E-congress on Nanosciences and Nanotechnology (ICNN 2021), Mashhad, Iran, Feb. 2021.

- Z. Norouzi, S.A. Mozaffari, **S. H. Mahmoudi Najafi**, "Chemical Bath Deposition: A Powerful Technique for Producing Nanoflake Structures as Advanced Material", 8th International E-congress on Nanosciences and Nanotechnology (ICNN 2021), Mashhad, Iran, Feb. 2021.

- Z. Norouzi, S.A. Mozaffari, **S. H. Mahmoudi Najafi**, $Ni(OH)_2$ Nano-flakes Synthesized through Chemical Bath Deposition for Application in Supercapacitor Electrode Material", 15th Annual Electrochemistry Seminar of Iran, Tehran, Iran, Oct. 2020.
- Z. Norouzi, S.A. Mozaffari, **S. H. Mahmoudi Najafi**, "Facile synthesis of $MnCo_2O_4$ nano-flower through electrodeposition as supercapacitor electrode material", 15th Annual Electrochemistry Seminar of Iran, Tehran, Iran, Oct. 2020.
- Z. Norouzi, S.A. Mozaffari, **S. H. Mahmoudi Najafi**, "ZnO Template-assisted NiO Nano-spheres as Electrode Material for Supercapacitors", 8th International Conference on Nanostructures (ICNS8), Sharif University, Tehran, Iran, Nov. 2020.
- **S. H. Mahmoudi Najafi**, M. Baghaei, A. Ashori, "Preparation of Lactic Acid Grafted Starch Acetate Nanoparticles as Drug Carriers", 2nd International Conference in New Research on Chemistry & Chemical Engineering, Amirkabir University of Technology, Tehran, Iran, June 2016.
- Maryam Baghaei, **S. H. Mahmoudi Najafi**, "Preparation of starch acetate nanoparticles by ultrasonic irradiation", 23rd Iranian Seminar of Organic Chemistry, Sanandaj, Iran, Sep. 2015.
- Elnaz Mohammadi Ghelichlouei, **S. H. Mahmoudi Najafi**, "Synthesis of novel N-4-piperazinyl derivatives of ciprorfloxacin containing pyrimidine moiety", 23rd Iranian Seminar of Organic Chemistry, Sanandaj, Iran, Sep. 2015.
- N. Saghafikia, **S. H. Mahmoudi Najafi**, "Nanoporous Metal-Organic Frameworks: Application in Hydrogen Storage", 3rd Hydrogen and Fuel Cell Conference, Tehran, Iran, May 2015.
- **S. H. Mahmoudi Najafi**, Z. Bashiri Sadr, A. Azimvand, "Preparation of Grape Pomace Powder as Antioxidant and Dietary Fiber Source Using Cryogenic Grinding", 4th National Congress on Medicinal Plants, Tehran, Iran, May 2015.
- H. Rahmani, **S. H. Mahmoudi Najafi**, A. Ashori; "Effects of fiber contents, fiber orientations and number of layers on some mechanical properties of carbon fiber/epoxy composites", 1st International Conference on Composite Pipes, Vessels and Tanks; Tehran; Iran; Jan. 2015.
- **S. H. Mahmoudi Najafi**; "Renewable Energy Resource Assessment: IRAN"; Expert Group Meeting on Renewable Energy Resource Assessment for Countries in the Asia-Pacific Region, Bangkok; Thailand; Sep. 2014.

- M. Ranjbar, M. Taghizadeh Mazandarani, S. Sheshmani, **H. Mahmoudi Najafi**; "Preparation and Characterization a New Nanocomposite of Potassium-Minoxidil by Sonochemical Method"; 15th Iranian Inorganic Chemistry Conference; Sabzevar; Iran; Sep. 2013.

- M. Ranjbar, M. Taheriyan, **H. Mahmoudi Najafi**, S. Sheshmani, "Synthesis and Characterization of Nanoparticle Copper(II) Minoxidil Complex under Ultrasound Irradiation", 15th Iranian Inorganic Chemistry Conference, Sabzevar, Iran, Sep. 2013.

- Z. Bashiri-Sadr, **S. H. Mahmoudi Najafi**, "Conventional Versus Cryogrinding of Medicinal Plants: St. John's Wort and Lemon Balm", 2nd National Congress on Medicinal Plants, Kish Island, Iran, 2012.

- N. Shahsavan, M. Ranjbar, M. Yousefi, **S. H. Mahmoudi Najafi**, "Synthesis and characterization of nano-composite of monoxide-zinc oxide", 2nd International Conference on Composite, Characterization, Fabrication and Applications, Kish Island, Iran, 2011.

- S. Sheshmani, M. Ranjbar, **S. H. Mahmoudi Najafi**, N. Akbari Mobarakeh, "Preparation and Characterization of Nano-structured Lead(II) Compounds", 12th National Inorganic Chemistry conference, Gilan, Iran, 2010.

- Z. Bashiri-Sadr, **S. H. Mahmoudi Najafi**, "Cryogenic Grinding in Medicinal Plants Processing", Regional Experts Meeting and Workshop on Herbal Medicine Processing, IROST, Tehran, Iran, 2010.

- N. Akbari Mobarakeh, M. Ranjbar, **S. H. Mahmoudi Najafi**, S. Sheshmani, "Synthesis and characterization of nano-structured lead containing materials from a polymeric Minoxidil bromide lead(II) complex as precursor", 3rd Conference on Nanostructures (NS2010), Kish Island, Iran, 2010.

- M. Ghandi, G. Mashayekhi, **H. Mahmoudi Najafi**, "The Modified Diels-Alder reaction of p-benzoquinone with cyclopentadiene in the presence of Zeolite Y", 24th Annual Meeting of British Zeolite Association (BZA 2001), England, 2001.

- M. Ghandi, **H. Mahmoudi Najafi**, F. Farzaneh,"A simple route to diastereo- and enantioselective Diels-Alder reactions using modified zeolite Y", 23rd Annual Meeting of British Zeolite Association (BZA 2000), England, 2000.

- M. Ghandi, R. Sadeghpoor, **H. Mahmoudi Najafi**, F. Farzaneh, "The oxa-di-π-methane rearrangement of β,γ-unsaturated ketones induced by the external heavy atom cation effect within zeolite Y", 20th Annual Meeting of British Zeolite Association (BZA 1997), England, 1997.

Patents

- Z. Bashiri-Sadr, **S. H. Mahmoudi Najafi**, “Cryogrinding System for Medicinal Plants”, Iranian patent No. 67252 (2010).
- H. Rahmani, R. Kheirabadi, **S. H. Mahmoudi Najafi**, “Non-halogenated flame-retardant epoxy resin containing polyglycidyl monomers and phosphorous curing agent”, Iranian patent No. 91922 (2017).
- S.A. Mozaffari, **S. H. Mahmoudi Najafi**, Z. Norouzi, “Fabrication Process of Supercapacitor Electrode Material Based on MnO_2/CuO@$Ni(OH)_2$ Nanorod-Nanoflake Clusters”, Iranian patent No. 106411 (2022).
- S.A. Mozaffari, **S. H. Mahmoudi Najafi**, Z. Norouzi, “Asymmetric Supercapacitor Based on Ag@SCs@$Ni(OH)_2$ Nanospheres as Cathode Material and SCs/$Mg(OH)_2$ as Anode Material”, Iranian patent No. 108121 (2022).

Books

- **S. H. Mahmoudi Najafi**, S. Saffarzadeh Matin, "Hydrogen Storage Technologies", IROST, 2016.

SELECTED PROJECTS

- Preparation of the pharmaceutical Minoxidil
- Production of Ciprofloxacin from Q-Acid and Piperazine in Aqueous Medium
- Design and Fabrication of a Cryogrinding Prototype System for Medicinal Plants Processing
- Preparation of Grape Pomace Powder as Antioxidant Dietary Fiber by Cryogrinding Technology
- Technology Development of Three Standardized Medicinal Plant Products for the Food, Cosmetic and Pharmaceutical Industries using Cryogrinding Technology
- Fabrication and Evaluation of Cellulosic based Capsule Shell
- Production of Carbon Nanotubes in the Presence of Modified Silicate Zeolites
- Feasibility Study of Hydrogen Storage Technologies
- Preparation of Epoxy and Polyimide Adhesives with Applicability in Space Environments
- Preparation of modified chitosan/urethane composites and evaluation of their antimicrobial properties
- Investigating the physical and chemical properties and evaluation of the production of a sample of cellulose-based pharmaceutical capsule shell

RESEARCH INTERESTS

- Synthesis and Extraction of Organic and Natural Compounds
- Nanoscience and Nanotechnology
- Hydrogen Storage Technologies
- Organic Reactions in Zeolites
- New Composites and Biocomposites
- New Nanostructures as Supercapacitor Materials