Seyed Mohammad Mahdi Nouri

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Curriculum Vitae

EDUCATION

2009 - 2014 **Ph.D. in Chemical Engineering**
Amirkabir University of Technology, Tehran, Iran
- **Thesis:** Modeling and experimental investigation of capturing CO_2 by reaction with lime

2005 - 2008 **MSc in Chemical Engineering**
Amirkabir University of Technology, Tehran, Iran
- **Thesis:** Simulation software preparation for the moving bed reactors

2001 - 2005 **BSc in Chemical Engineering**
Razi University, Kermanshah, Iran
- **Project:** Thermodynamic study of direct synthesis of Dimethyl ether

OBJECTIVE AND RESEARCH INTERESTS

- CO_2 capture using calcium looping process
- Synthesis of catalysts for gas phase reactions
- Adsorption process for water treatment
- Mathematical modeling in chemical reaction engineering

PROFESSIONAL EXPERIENCES

2023- Present **Visiting Professor**
University of Calgary
- Working with Green Catalysis Research Group (GCRG), Mathematical modeling of catalytic reaction systems
  https://ucalgary.ca/groups/gcrg/home

2014- 2023 **Assistant Professor**
Hakim Sabzevari University, Iran
- Group leader (a group of 20 BSc, 3 MSc students), research adviser to graduate and undergraduate students
- Carry teaching load (10 courses annually) with administrative obligations
- Conducting projects and research in the fields of synthesis of catalysts and adsorbents, CO oxidation reaction, water treatment using adsorption, and Mathematical modeling:
  - ✓ Fabrication of modified CNT using copper oxide for removal of tetracycline from aqueous solution
  - ✓ Synthesis of Cu-Co metal oxide composite using the sonochemical and hydrothermal methods for the CO oxidation reaction
  - ✓ Synthesis of high entropy oxide catalyst using the hydrothermal method for the CO oxidation reaction
  - ✓ Application of deep eutectic solvent for the synthesis of metal oxide catalysts
  - ✓ Mathematical modeling of H2S removal using Ca-based sorbent by grain model
  - ✓ Modeling of direct reduction of iron-ore using three interface model

http://www.hsu.ac.ir/en/

2012- 2014 **Research Assistant**

Amirkabir University of Technology (Tehran Polytechnic), Iran

- Modeling and experimental investigation of capturing CO_2 by reaction with lime
- Co-supervision of graduate and undergraduate students on gas-solid reaction projects, including modeling direct reduction of iron ore, modeling of SO_2 reaction with CaO

http://aut.ac.ir/aut/ https://chemeng.aut.ac.ir/content/4145/Gas-Solid-Reactions-Lab l

2006- 2013 **Control Room Senior Operator**

Khorasan Petrochemical Complex, Iran

- Working full time as a process engineer in a Melamine production plant (20000ton/yr)
- Practical experience in different procedures of a chemical plant such as start-up and shut down and overhaul
- Collaboration in energy auditing of the melamine plant which leads to eliminating the steam condensate pumps from the process saving electrical energy.

https://www.khpc.ir/index.php/en/

2006- 2009 **Research Assistant**

AmirKabir University of Technology, Tehran, Iran

- Mathematical modeling of moving bed reactor of direct reduction of iron ore

SKILLS

Technical

- Critical analysis of scientific literature, experimental data processing, and technical reports preparation
- Chemical synthesis methods (Hydrothermal, Sonochemical, Sol-Gel, Precipitation)
- Materials and surface characterization (SEM, TEM, AFM, XRD, ICP, FTIR, DSC, TGA)
- Mathematical modeling of fluid-solid systems
- Numerical methods for solving PDE systems (Finite difference, Finite element)
- Design of experiment methods (RSM, Taguchi, etc.)

Computer & IT

- **Engineering Software:** Matlab; Aspen HYSYS
- **General Software:** Originlab; Microsoft Office; Minitab; Design Expert, Endnote,

PUBLICATIONS

Published in peer-reviewed journals

1) **Nouri, S. M. M**., H. Ale Ebrahim, and E. Jamshidi. "Simulation of direct reduction reactor by the grain model." *Chemical Engineering Journal* 166, no. 2 (2011): 704-709.
2) **Nouri, Seyed Mohammad Mahdi**, Habib Ale Ebrahim, and Bahram Naser Nejad. "A modified random pore model for carbonation reaction of calcium oxide with carbon dioxide." *Hemijska industrija* 69, no. 2 (2015): 209-217.
3) **Nouri, S. M. M.**, H. Ale Ebrahim, and B. Naser Nejad. "Preparation of a nano CaO sorbent for improving the capacity for CO2 capture reaction." *Synthesis and Reactivity in Inorganic, Metal-Organic, and Nano-Metal Chemistry* 45, no. 6 (2015): 828-833.
4) **Nouri, S. M. M**., H. Ale Ebrahim, B. Nasernejad, and A. Afsharebrahimi. "Investigation of CO2 reaction with CaO and an acid-washed lime in a packed-bed reactor." *Chemical Engineering Communications* 203, no. 1 (2016): 1-7.
5) **Nouri, S. M. M**., and H. Ebrahim. "Effect of sorbent pore volume on the carbonation reaction of lime with CO2." *Brazilian Journal of Chemical Engineering* 33 (2016): 383-389.
6) **Nouri, S. M. M.**, and H. Ale Ebrahim. "Kinetic study of CO2 reaction with CaO by a modified random pore model." *Polish Journal of Chemical Technology* 18, no. 1 (2016).

7) Farrokhi, M., H. D. Heydarzadeh, and **S. M. M. Nouri**. "CO2 removal by Ca-based sorbents in a packed-bed reactor: Kinetic study and aspen plus simulation." *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects* 39, no. 9 (2017): 867-873.

8) Goushchi, Javid Mehr, Amir Mirzajani, Behzad Behjati, and **Seyed Mohammad Mahdi Nouri**. "Kinetic modeling of Congo red dye decolorization by US/O3 process: nonlinear regression analysis." Desalination and Water Treatment 84 (2017): 237-243.

9) Mirzajani, A., H. Ebrahim, and **S. M. M. Nouri**. "Simulation of a direct reduction moving bed reactor using a three interface model." Brazilian Journal of Chemical Engineering 35 (2018): 1019-1028.

10) Alizadeh, M., S. A. Hosseini, **S. M. M. Nouri**, Z. Khalighi, and B. Delfarah. "Low-cost nanostructured Fe2O3-based composite catalysts synthesized by mechanical milling for CO oxidation reaction." *Chemical Engineering Communications* 205, no. 8 (2018): 1041-1049.

11) Abadi, MH Jannat, **S. M. M. Nouri**, R. Zhiani, H. D. Heydarzadeh, and A. Motavalizadehkakhky. "Removal of tetracycline from aqueous solution using Fe-doped zeolite." *International journal of industrial chemistry* 10, no. 4 (2019): 291-300.

12) **Nouri, Seyed Mohammad Mahdi**, Amir Reza Khadem, Seyyed Alireza Hosseini, and Seyedmostafa Nouri. "Co-Cu oxide nano-flake adsorbent for tetracycline removal from aqueous solution." *Environmental Science and Pollution Research* (2021): 1-9.

13) **Nouri, Seyed Mohammad Mahdi**, Zahra Fazaelipour, Nahid Mehri, and H. Heydarzadeh Darzi. "Investigation of Zeolite 4A Modified by CU for Tetracycline Removal from Aqueous Environment." Journal of Water and Wastewater; Ab va Fazilab (in persian) 32, no. 4 (2021): 79-92.

14) FB Shaafi, A Motavalizadehkakhky, R Zhiani, **SMM Nouri**, M Hosseiny, Sulfated zirconium oxide-decorated magnetite KCC-1 as a durable and recyclable adsorbent for the efficient removal of asphaltene from crude oil, (2021), RSC advances

15) **SMM Nouri**, AR Khadem, SA Hosseini, S Nouri, Co-Cu oxide nano-flake adsorbent for tetracycline removal from aqueous solution, (2022), Environmental Science and Pollution Research

16) FB Shaafi, A Motavalizadehkakhky, R Zhiani**, SMM Nouri**, M Hosseiny, ZSM-5/Fe3O4 and ZSM-5/Fibrous Cellulose as Two Durable and Recyclable Adsorbents for Efficient Removal of Asphaltenes from Crude Oil, (2022), Petroleum Chemistry

17) A Taghavi Golsefidi, H Ale Ebrahim, **SMM Nouri**, Study on calcium oxide pore size distribution changes during carbonation reaction for the greenhouse gas separation, (2022), International Journal of Environmental Science and Technology

18) M Zabihi, A Motavalizadekakhky, M Omidvar, R Zhiani, **SMM Nouri**, Preparation and investigation of M-MWCNT nanocomposite by hydrothermal method for Pb (II) ions adsorption, (2022), International Journal of Nano Dimension

TEACHING EXPERIENCES (TAUGHT COURSES)

09.2013- 09.2022 **Hakim Sabzevari University, Sabzevar, Iran**

Graduate: Advanced mathematics in Chemical Engineering

Undergraduate: Refinery Processes, Mass Transfer, Application of Computer Software in Chemical Engineering (MATLAB), Plant Design in Chemical Engineering, Unit Operations II, Application of Mathematics in Chemical Engineering

09.2016- 04.2019 **Neyshaboor branch of Islamic Azad University, Neyshaboor, Iran**

Graduate: Mathematical modeling in chemical engineering, Chemical reaction engineering

09.2017- 01.2018 **Neyshaboor branch of Islamic Azad University, Neyshaboor, Iran**

Undergraduate: Mass Transfer

LANGUAGES

- **Farsi**: Native
- **English**: Professional Working Proficiency

HONORS, AWARDS & MEMBERSHIPS

- Research grants on “Synthesis of catalysts based on nanostructure high entropy oxide catalysts for CO removal from flue gas”, Grant No. 99031917 from Iran National Science Foundation, 2021
- Faculty Excellence Award (Research), Hakim Sabzevari University, 2016
- Teaching Excellence Award, Hakim Sabzevari University, 2017
- Full fund scholarship for the PhD degree from Iran Ministry of Science, Research & Technology MSRT (2011)
- Member of theTalented Students Office at Amirkabir University of Technology

REVIEWER FOR JOURNALS

- Journal of Environmental Chemical Engineering
- Fuels
- Cleaner Energy and Technology
- Process Safety and Environmental Protection
- Iranian Journal of Chemical Engineering

REFEREES

- Prof Hau Song, Professor of Chemical Engineering, University of Calgary, Canada, Email: sonh@ucalgary.ca
- Prof Habib Ale Ebrahim, Professor of Chemical Engineering, AmirKabir University of Technology, Iran, Email: alebrm@aut.ac.ir, Tel: +982164543177
- Prof Ehsan Esmaeilnezhad, Associate Professor of Petroleum Engineering, Hakim Sabzevari University, Iran, Email: ehsanesmailnezhad@yahoo.com, Tel:+985144012522