

## Maryam Molaverdi, Ph.D.

Assistant Professor (Faculty Member)

National Institute of Genetic Engineering and Biotechnology (NIGEB), Ministry of Science, Research and Technology, Tehran, Iran

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## Professional Summary

Innovative researcher and academic with extensive expertise in **renewable energy, biofuels, and bioprocess engineering**, combining strong experimental background with advanced data-driven methods such as **machine learning for bioenergy process optimization**. Over 10 years of experience in biotechnology and chemical engineering, including **international research collaborations** (Lund University, Sweden). Published extensively in high-impact journals, with **H-index 7 and 346 citations**. Passionate about bridging academic research with **industrial applications** in the petrochemical and renewable energy sectors, particularly in the valorization of methanol and lignocellulosic biomass into high-value bio-based products.

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## Academic position

### Assistant Professor (Faculty Member), 2025–Present

National Institute of Genetic Engineering and Biotechnology (NIGEB), Ministry of Science, Research and Technology, Tehran, Iran

- Research and teaching in biofuels, renewable energy systems, and industrial biotechnology.
  - Leading projects on microbial biofuel production (bioethanol) and bioprocess scale-up.
  - Supervision of MSc and PhD students in biotechnology and renewable energy
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## Education

### **Amirkabir University of Technology (Tehran, Iran)**

2021–Present

Postdoctoral, Chemical Engineering (Biotechnology: Renewable Energy)

*Topic: Using Machine Learning to Predict Bioethanol Production from Lignocellulosic Biomass*

Supervisor: Dr. Narges Fallah (Associate Professor), Department of Chemical Engineering,  
Amirkabir University of Technology

### **Isfahan University of Technology (Isfahan, Iran)**

2014–2019

Ph.D., Chemical Engineering

*Thesis: Production of ethanol from rice straw and corn stover via simultaneous saccharification and fermentation at high solids loading*

Supervisor: Prof. Keikhosro Karimi

Thesis Grade: 20/20

### **Isfahan University of Technology (Isfahan, Iran)**

2010–2013

Master of Science, Chemical Engineering (Separation Processes)

*Thesis: Production of ethanol from sweet sorghum stalk with Mucor indicus by solid-state fermentation*

Supervisors: Prof. Keikhosro Karimi and Assoc. Prof. Morteza Khanahmadi

Thesis Grade: 19.9/20

### **Isfahan University of Technology (Isfahan, Iran)**

2006–2010

Bachelor Degree, Chemical Engineering

Thesis Grade: 20/20

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## Teaching Experience

Amirkabir University of Technology:

- Renewable Energy in Biotechnology
- Process Design Project

Isfahan University of Technology:

- Heat Transfer

Azad University of Shahreza:

- Heat Transfer
  - Reactor Design
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## Research Experience

**Visiting Researcher (2018), Chemical Engineering Department, Lund University, Sweden**

- Solid-state fermentation
- steam explosion pretreatment
- enzymatic hydrolysis

**Biotechnology Laboratory (2013–2019), Chemical Engineering Department, Isfahan University of Technology**

- Ethanol production at high solids loading
- cultivation of *Mucor indicus*
- enriched animal feed from waste activated sludge

**Microbiology Laboratory (2013–2019), Isfahan University of Technology**

- Microbial cultivation
  - microbial counting methods
  - bioprocess optimization
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## Awards and Honors

- Distinguished PhD Student, Isfahan University of Technology, Dept. of Chemical Engineering (2019) – **1st Place**
  - Distinguished MSc Student, Isfahan University of Technology, Dept. of Chemical Engineering (2013) – **3rd Place**
  - Distinguished BSc Student, Isfahan University of Technology, Dept. of Chemical Engineering (2010) – **1st Place**
  - Distinguished Bachelor Graduate, Iranian Association of Chemical Engineers (2010)
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## Professional Memberships

- Member, Iranian Biofuel Society (2015–Present)
  - Member, Iran's National Elites Foundation (2015–2018)
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## Software & Programming Skills

- Aspen Hysys (Intermediate)
  - Matlab (Intermediate)
  - AutoPlant (Intermediate)
  - MS Office (Advanced)
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## Analytical Techniques

- FTIR, HPLC, SEM, XRD
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## Selected Publications (ISI Journals)

- Molaverdi, M., et al. Efficient ethanol production from rice straw through cellulose restructuring and high solids loading fermentation by *Mucor indicus*. *Journal of Cleaner Production*, 2022.
- Molaverdi, M., et al. Efficient ethanol production from corn stover by modified mild alkaline pretreatment. *Renewable Energy*, 2021.
- Molaverdi, M., et al. High titer ethanol production from rice straw via solid-state simultaneous saccharification and fermentation by *Mucor indicus*. *Energy Conversion and Management*, 2019.
- Molaverdi, M., et al. Improvement of dry SSF of rice straw to high ethanol concentration by sodium carbonate pretreatment. *Energy*, 2018.
- Molaverdi, M., et al. Dry/Solid-State Fermentative Ethanol Production. In *Encyclopedia of Renewable and Sustainable Materials*, Elsevier, 2018.
- Molaverdi, M., et al. Enhanced sweet sorghum stalk to ethanol by *Mucor indicus* using solid state fermentation. *Industrial Crops and Products*, 2013.
- Khaleghian, H., Molaverdi, M., et al. Silica removal from rice straw to improve hydrolysis and ethanol production. *Industrial & Engineering Chemistry Research*, 2017.
- Satari, B., Karimi, K., Molaverdi, M., et al. Structural features influential to enzymatic hydrolysis of cellulose-solvent-based pretreated wood. *Bioprocess and Biosystems Engineering*, 2018.

**Citations:** 346

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**H-index:** 7

Google Scholar:

<https://scholar.google.com/citations?hl=en&user=13wIVdIAAAAJ>

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## Conferences

- Farzaneh Radmanesh, Maryam Molaverdi, et al. "Study of Membrane Selectivity of Hydrogen and Water Vapor in Fluidized Bed Reactor to Produce DME." 14th Iranian National Congress on Chemical Engineering (IChEC), 2012.
  - Molaverdi, M., Karimi, K., Khanahmadi, M. "Enhanced sweet sorghum stalk to ethanol by *Mucor indicus*." 14th Iranian National Congress on Chemical Engineering (IChEC), 2012.
  - Molaverdi, M., Karimi, K., Khanahmadi, M. "Ethanol production from sweet sorghum by solid state fermentation." 14th Iranian National Congress on Chemical Engineering (IChEC), 2012.
  - Molaverdi, M., Karimi, K., Khanahmadi, M. "Production of ethanol from sweet sorghum stalk with *Mucor indicus* by solid state fermentation." National Conference of Novel Technologies in Chemical Industries, 2012.
  - Molaverdi, M., Karimi, K., Khanahmadi, M. "Production of ethanol from stalk of sweet sorghum with *Mucor indicus* by solid state fermentation." APEESD, Malaysia, 2012.
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## Research Interests

- Biorefineries and Renewable Energy Systems
  - Microbial Biofuels (Bioethanol, Biobutanol)
  - Bioprocess Engineering & Fermentation Technology
  - AI and Machine Learning in Bioenergy Optimization
  - Waste-to-Energy and Petrochemical By-product Valorization
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## Selected Courses

- Bioreactor Design
  - Biofuels
  - Biochemistry
  - Industrial Water Treatment
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## References

- Prof. Keikhosro Karimi (MSc & PhD Supervisor), Research Institute for Biotechnology and Bioengineering, Isfahan University of Technology | Email: karimi@cc.iut.ac.ir
- Prof. Mats Galbe (PhD Supervisor), Department of Chemical Engineering, Lund University, Sweden | Email: mats.galbe@chemeng.lth.se