Hadi Adloo

PhD in Chemical Engineering

Assistant professor, Islamic Azad university, Shiraz Branch, Shiraz, Iran

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INTERESTS

- Image processing of reservoir rocks
- Characterizing the fluid transport in porous media using Image based CFD and pore network simulation
- Designing steam-methane reformers

HIGHLIGHTED ACTIVITIES

- In-house Pore Network simulator for transport and diffusion in porous media
- 'ReformDesign' a unique in-house software for thermal designing and simulating large scale SMR plants
- Designing catalytic reactors from basic level requisition to detail analysis level

EDUCATION

PhD. | Chemical Engineering (GPA:16.46) 2007- 2014
Isfahan University of Technology (IUT), Isfahan, Iran
Thesis title: Development of pore network method in simulation of non-catalytic gas-solid reaction- Study of sulphurdioxide chemisorption on copper oxide sorbents
Supervisor: Prof. M.Nasr Esfahany
Prof. M.R.Ehsani

M. S. | Chemical Engineering (GPA: 17.6) 2004-2007
University of Sistan & Balouchestan (USB), Zahedan, Iran
Thesis title: Modeling and simulation of natural gas sweetening using pressure swing sorption.
Supervisor: Proff. M. Zivdar

B. S. | Chemical Engineering (GPA: 15.01) 2000- 2004
Shahid Bahonar University of Kerman (UK), Kerman, Iran
Project title: A software development for hydrodynamic study of drilling mud through oil wells
Supervisor: Proff. A. Mohebbi

Work Experience

- Islamic Azad University- Shiraz Branch (2016-Cont.)
- Hampa Energy Engineering Co. (2013-Cont.)
- Payam-e-Nour University (Shiraz Branch) - Part time (2014-Cont.)
- Isfahan Saman Energy (2009-2012)
- Azad University (Shahreza Branch)- Part time (2007-2009)

Research Experiences

- Developing a software to design and simulate fire box section of large scale Steam Methane Reformers "ReformDesign"
  HEDCO
  2014-Cont.
- Technology studies for Syngas Production by Methane Reforming Processes
  NPC-RT
  2016-2017.
- Basic design for Reforming and Ammonia pilot plant in order to producing 1.4 MTPD of Ammonia
  NPC-RT
  2016-2017.
- Pore network simulation for studying the activity of Steam Methane Reforming Catalysts
  IAU of Shiraz-HEDCO-Magdeburg University-PUT Ahwaz Branch
  2016-Cont.
- Designing and manufacturing a dielectric O-rings
  Abnoos polymer Co.
  2015
- Developing a new technology to improve the coupler-tube junction in electorofusion welding process
  - *Abnoos polymer Co. -National Iranian Gas Company*
  2015
- Developing an in-house software for rating of the industrial heaters
  HEDCO
  2014-Cont.
- Experimental study on catalyst development for desulphurization from tail gas oxidizer using metal oxide sorbents

IUT-National Iranian Oil Refinery and Distributing Company

2009–2012

- Software development for design and processing of flare stack and burning pit as an extension in HYSYS 3.2

  IUT-National Iranian South Oil Company

  2008–2010

- Software development for design and processing of slug catcher

  IUT-National Iranian South Oil Company

  2008–2010

- Modeling and simulation of natural gas sweetening using pressure swing sorption

  USB-National Iranian Gas Company

  2005–2007

- Drilling fluid selection using well hydraulic considerations (Software Development)

  Shahid Bahonar University of Kerman- National Iranian Drilling Company

  2002–2005

Teaching Experience

Instructor | Chemical Engineering 2015–Cont.
IAU, Shiraz, Iran

- **Subject:** Advanced Reactor Design, Thermodynamics, Static and Mechanics of Materials, Applied Mathematics, Basics of Petrochemical Industries, Basics of Gas Refining Industries.

Instructor | Chemical Engineering 2014–2015
PNU, Shiraz, Iran

- **Subject:** Heat transfer

Instructor | Chemical Engineering 2007–2009
Shahreza University, Shahreza, Isfahan, Iran

- **Subject:** Chemical Engineering Thermodynamics, Gas Processing

Instructor | Chemical Engineering 2007–2010
Isfahan University of Technology (IUT), Isfahan, Iran

- **Subject:** Heat Transfer Laboratory, Unit Operation Laboratory, Fluid Mechanics Laboratory

Instructor | Aspen Plus — Winter 2010
UCF Teaching Center, Isfahan, Iran

- **Subject:** Solid processing using Aspen Plus

PUBLICATIONS

JOURNALS

- **Adloo H.,** L'Heureux I., Kharaghani A.; Effects of correlated morphological and topological heterogeneity of pore network on effective transport and reaction parameters; Chemical Engineering Science; 207; 280–304; **2019**
- **Adloo H.**, Safaei Z., Nasr Esfahany M., Ehsani M.R.; Development of pore network method in simulation of non-catalytic gas-solid reaction- Study of sulfur dioxide chemisorption on copper oxide sorbents; Chemical Engineering Journal; 262; 295-312; **2015**
- **Adloo H.**, Nasr Esfahany M., Ehsani M.R.; Pore network simulation for diffusion through a porous membrane: A comparison between Knudsen and Oscillator models; The Canadian Journal of Chemical Engineering; 92; 1059-1069; **2014**
- Mohebbi A., **Adloo H.**, Ranjbar M.; Selection of Drilling Muds Using Well Hydraulics Calculations; Chemical Technology: An Indian Journal; vol. 4; 2008

CONFERENCES

- Khosravi Nikkou M.R., Garmsirian M., **Adloo H.**; Study of multicomponent mass transfer of steam methane reforming in pore network with Stephan–Maxwell mechanism; 10th International Chemical Engineering Congress & Exhibition; Isfahan; 2018
- Shahabi M., Ehsani M. R., **Adloo H.**, Kazemian M.; Modeling of Adsorption of Light Mercaptans from Natural Gas using Pore Network Model; 7th International Chemical Engineering Congress & Exhibition; Kish; 2011
- Abdollahi Kharaji H., **Adloo H.**, Ehsani M. R., The effects of Cu concentration on the sulfur capacity of CuO/alumina; 14th Iranian Chemical engineering Congress; Sharif University; 2013
- Golafshan R., **Adloo H.**, Ehsani M. R., Haghshenasfard M.; CFD study on adsorption on a single catalyst; 3rd Iranian Computational Fluid Dynamics, 2011

- **Adloo H.**, Ehsani M. R.; Simulation of Adsorption with Surface and Pore Diffusion in Two Dimensional Pore Networks; APCChE 2010; Taiwan
- **Adloo H.,** Mohebbi A., Ranjbar M.; Drilling Mud Selection Using Well Hydraulics; Proceedings of the 11th Iranian Chemical Engineering Congress; Tarbiat Modares Univ.; 2006

TECHNICAL EXPERIENCE

- Design and manufacturing a laboratory setup for testing catalyst performance (IUT; NIORDC; Iran)

  Role: Designing the process, Fabricating the reactor, Fabricating and testing the CuO catalysts for SO2 capturing.

- Energy survey in Bistoon Petrochemical Co.; Study on compressors and air coolers (ISE; Bistoon Petrochemical Co.; Iran)

  Role: Analyzing the compressor operation.

- Energy survey in Alloy industries.; Study on Oxygen plants (Isfahan Saman Energy- Iran)

  Role: Study on energy consumption of oxygen plant, Analyzing the compressor operation.

- Process design of a pilot plant for ammonia production (ton/day), steam reformer and its contributing convection section (HEDCO; NPT-RT; Iran)

  Role: Basic design of the ammonia process, Sizing the radiant and convection section of the reformer, Preparing PFD and P&ID, Sizing FD and ID fans.

- Process design of Urea and Ammonia Plat (HEDCO; Lavan Petrochemical Co.; Iran)

  Role: Amine unit simulation, Pump sizing, Compressor sizing, Control valve sizing, PSV sizing, Steam Reformer sizing and design, Drum sizing, Operating manual.

- Process design of desalter for crude oil (HEDCO; Abadan Refinery; Iran)
  Role: P&ID review.

- Thermal design for Primary Reformer (HEDCO; Lavan Petrochemical Co.; Iran)

Role: Thermal Design of Radiant Box and Convection section, DSH for Radiant box and convection section, DSH for Arch, Tunnel and Superheater burners, DSH for Air Pre Heater, DSH for Stack, preparation of PFD, P&ID, logic diagram, Review of Mechanical Drawings

- ReformDesign: an accurate way in designing and simulating steam-methane reformers

  This is an in-house software (Under the license of HEDCO) which is created to design different thermal and process aspects of large scale reformers. The software is validated with three different designs (KTI, Linde, and Kelloge) and is used to design a new one (HEDCO).

  Two versions of this Software are released up to 2019.

  Role: Simulating Thermodynamics aspects, know-how of the geometry, rating the process.

CAPABILITIES

- Fluent in speaking and writing in English/Beginner in Germany;
- Expert in Ansys Fluent, Aspen Hysys, Aspen plus, Aspen HTFS, Reform3pc (for Steam Reformers), FRNC5pc (for HRSG and Fired Heaters);
- Expert in Microsoft office;
- Expert in Matlab and .Net programming;