

# CURRICULUM VITAE

June 3, 2011

## Mohammad Haghighi, PhD

Assistant Professor of Chemical Engineering  
Founding Director of Reactor & Catalysis Research Center  
Vice Chancellor of Financial Affairs, Sahand University of Technology

### • Personal Information:

**Name:** Mohammad  
**Surname:** Haghighi Parapari  
**Date of Birth:** 03 June 1969  
**Place of Birth:** Azarshahr, East Azarbaijan, Iran  
**Nationality:** Iranian  
**Marital Status:** Married, Having a son and a daughter



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<http://staff.sut.ac.ir/haghighi/>

### • Education:

**2003-2007:** PhD, Chemical Engineering, Curtin University of Technology, Perth, WA, Australia.

**Thesis:** Catalytic Partial Oxidation of Methane for Direct Conversion of Natural Gas to Methanol

**1992-1995:** M.Eng., Chemical Engineering, Isfahan University of Technology, Isfahan, Iran.

**Thesis:** Simulation of Multicomponent Reactive Distillation

**1988-1992:** B.Sc., Chemical Engineering, Shiraz University, Shiraz, Iran.

**Research Project:** Temperature Distribution in Fins and Calculation of Heat loss

### • Research Interests:

Reaction Engineering: Nano-Catalysts and Reactor Design

Natural Gas Utilization

Nano Materials and Synthesis

Environmental Engineering: Air & Water Pollution Control and Treatment

Educational Systems & E-learning

### • Language Skills:

English, Persian, Turkish

## • Professional Experience:

- 2010-Date:** Vice Chancellor of Financial Affairs, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- 2007-Date:** Founding Director of Reactor & Catalysis Research Center, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- 2007-Date:** Assistant Professor, Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- 2000-Date:** Researcher, Environmental Engineering Research Center, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- 2007-2010:** Chair of Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- 2003-2007:** Researcher Assistant, Center for Fuel and Energy, Curtin University of Technology, Perth, WA, Australia.
- 2003-2007:** Ph.D. Student, Chemical Engineering Department, Center for Fuel and Energy, Curtin University of Technology, Perth, WA, Australia.
- 1997-2003:** Research Assistant, Reactor & Catalysis Research Center, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- 1995-2003:** Academic staff, Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.

## • Professional Memberships:

- 2007-Date:** Australasian Association for Engineering Education, A2E2, Member.
- 2007-Date:** The Combustion Institute, CI, Member.
- 2007-Date:** Nano Materials Research Center, Member.
- 2006-Date:** Australian Institute of Energy, AIE, Member.
- 2004-Date:** Australian Society for Computers in Learning in Tertiary Education, ASCILITE, Member.
- 2000-Date:** Environmental Engineering Research Center, EERC, Member.
- 1997-Date:** Reactor & Catalysis Research Center, RCRC, Founding Director.
- 1995-Date:** Chemical Engineering Faculty, Sahand University of Technology, Academic Staff.
- 2002-Date:** Iranian Association of Catalysis, IAC, Member.
- 1999-Date:** Iranian Association of Chemical Engineers, IACHe, Member.
- 2003-2007:** Centre for Fuels and Energy, CFE, Curtin University of Technology, Member.
- 2001-2002:** Iranian Chemistry and Chemical Engineering Society, ICCES, Member.

## • Teaching Experience:

- Industrial Reactor Design (2008-Date):** PhD course, Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- Heterogeneous Catalysis (2007-Date):** MSc course, Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- Advanced Reactor Design (2007-Date):** MSc course, Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- Kinetic and Reactor Design (1996-2001 and 2007-Date):** BSc course, Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- Process Control (1998-2000 and 2010-Date):** BSc course, Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- Engineering Software (2007-2008):** BSc course, Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- Unit Operation I (1999-2003):** BSc course, Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.

- Mass and Energy Balance (2000-2003):** BSc course, Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- Unit Operation Laboratory (1999-2002):** BSc course, Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- Petrochemical Processes (1996-2001):** BSc course, Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- Heat Transfer Laboratory (1996-1999):** BSc course, Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- Petrochemical Processes II (1996-1999):** BSc course, Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- Petrochemical Processes I (1995-1999):** BSc course, Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.

- **Thesis Supervision:**

**PhD Students:**

- Farhad Rahmani (2010-Date):** (Supervisor) "Synthesis and Catalytic Applications of High-Surface-Area Aerogels", Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- Somayeh Allahyari (2009-Date):** (Supervisor) "Synthesis of Nanostructured Catalysts for Conversion of Syngas to Dimethyl Ether in a Microreactor", Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- Nader Rahemi (2008-Date):** (Supervisor) "CO<sub>2</sub>-Reforming of Natural Gas over Innovative Catalysts Prepared via Plasma Technology", Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- Mohammad Ghadiri (2009-Date):** (Advisor) "Synthesis of Novel Catalysts on the Bases of Ferrisilicate and Study of Regeneration of Used Industrial Catalysts on the Bases of Iron Oxide and Catalytic Performance of Them in Ethylbenzene Dehydrogenation Process", Inorganic Chemistry Department, Faculty of Chemistry, University of Tabriz, Tabriz, Iran.
- Arash Rahimi (2006-Date):** (Advisor) "Development of Optimal Kinetic Model of HCCI Combustion of n-Heptane and Natural Gas Mixture for prediction of their Combustion, Performance and Pollution Considerations", Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- Keyvan Shayesteh (2007-2010):** (Co-supervisor) "Influence of Effective Parameters of Mixing on Solid State Reactions in Vibration Mill", Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.

**MSc Students:**

- Seyed Reza Yahyavi (2011-Date)** (Supervisor) "Modeling of Dry Reforming of Methane Process Based on Nanostructured Ni-Co/Al<sub>2</sub>O<sub>3</sub>-MgO Catalysts Considering Magnesia Role in Catalytic Performance", Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- Mahdi Sharifi (2011-Date)** (Supervisor) "Synthesis and Characterization of Al<sub>2</sub>O<sub>3</sub>-ZrO<sub>2</sub> Supported Nanocatalysts Using Sol-Gel Method and Their Catalytic Performance Comparison to Impregnated Catalysts in Dry Reforming of Methane", Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- Seyed Mehdi Sajjadi (2011-Date)** (Supervisor) "Synthesis of Nanostructured Co and Cu Doped Ni/Al<sub>2</sub>O<sub>3</sub> Catalysts Using Sol-Gel Method and Their Evaluation toward Syngas Production", Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.

- Seyed Jamal Hassani Rad (2011-Date)**  
(Supervisor)  
"Synthesis and Characterization of Nanostructured Al<sub>2</sub>O<sub>3</sub>-CeO<sub>2</sub> and Al<sub>2</sub>O<sub>3</sub>-MgO Supported Catalysts Using Sol-Gel Method and Their Catalytic Performance Comparison to Impregnated Catalysts in Dry Reforming of Methane", Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- Majid Amereh (2011-Date)**  
(Supervisor)  
"Synthesis of Nanostructured Pt/Clinoptilolite-CeO<sub>2</sub> catalysts using Acid Treatment and Precipitation-Ultrasound Methods for Abatement of Toluene from Polluted Air", Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- Yaser Vafaiean (2010-Date)**  
(Supervisor)  
"Synthesis and Evaluation of nano catalysts supported by ZSM-5 using ultrasound energy methods to use in dry reforming of methane", Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- Mojtaba Chorghand (2010-Date)**  
(Supervisor)  
"Synthesis of SAPO supported nanocatalysts via hydrothermal and ultrasound methods", Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- Mitra Ebrahimejad (2010-Date)**  
(Supervisor)  
"Evaluation of Performance of Fluorine and Phosphorus on Hydrodesulfurization Nanocatalysts", Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- Mohammad Reza Khoshbin (2009-Date):**  
(Supervisor)  
"Synthesis of Zn-Cu-ZSM5 Nanocatalysts for Direct Conversion of Synthesis Gas to Dimethyl Ether", Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- Nima Mohammadi (2009-Date):**  
(Supervisor)  
"Synthesis of Pd-Cu/Alumina Nanocatalyst via Sonochemistry Method", Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- Mohsen Parvas (2009-Date):**  
(Supervisor)  
"Synthesis of transition metals over Ceria-Zirconia Nano catalysts using ultrasound methods and their application in the wet air oxidation process", Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- Solmaz Sadeghi (2009-Date):**  
(Supervisor)  
"Synthesis of CuO/ZnO/H-ZSM-5 nanocatalyst for Conversion of Methanol to Gasoline", Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- Mahdi Shahrezaei (2009-Date):**  
(Co-supervisor)  
"On the Synthesis Methods of Titanium Dioxide Nanotubes and Their Applications", Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- Maliheh Hosseinian (2009-2011)**  
(Co-supervisor)  
"Conversion of Methane to Methanol Using Enzymes", Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- Mozaffar Abdollahifar (2008-2010):**  
(Supervisor)  
"Synthesis of Nanocatalyst for CH<sub>4</sub> Reforming Using Ultrasonic Energy", Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- Nazli Asgari (2008-2010):**  
(Co-supervisor)  
"Process Design of Xylene Removal from Industrial Gases by Oxidation and Investigation of Effective Parameters", Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- Hamed Morshedi (2008-2010):**  
(Supervisor)  
"Kinetic modeling of removal of Toluene from Industrial

(Supervisor)	Waste Gas using Thermal Incinerator", Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
<b>Saeid Vosough (2008-2010):</b> (Supervisor)	"Experimental Study of Thermal Oxidation of Toluene and Natural Gas in Thermal Incinerator", Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
<b>Zahra Abbasi (2007-2009):</b> (Co-supervisor)	"VOC Abatement from Polluted Air Using Cerium Oxide NanoCatalyst via Catalytic Oxidation Method", Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
<b>Leila Karimnezhad (2007-2009):</b> (Co-supervisor)	"Removal of Benzene and toluene from Polluted Air Using Activated Carbon", Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
<b>Ehsan Pipelzadeh (2007-2009):</b> (Co-supervisor)	"Study of the Key Parameters Effect on Synthesis of Titanium Oxide Nanoparticles and its Coating with Silver by Wet Chemical Method", Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
<b>Somayeh Allahyari (2007-2008):</b> (Supervisor)	"Sonosynthesis of Wet Air Oxidation Nanocatalysts for Removal of Organic Pollutants", Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
<b>Mohammad Saleh Ghodrati (2007-2008):</b> (Supervisor)	"Using Ultrasonic Energy for Preparation of CdSe/TiO <sub>2</sub> Nanophotocatalyst for Removal of Phenol in Water under Solar Light Irradiation", Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.
<b>Nader Rahemi (2007-2008):</b> (Supervisor)	"Using Ultrasonic Energy for Preparation of Hydrodesulfurization Nano Catalyst", Chemical Engineering Faculty, Sahand University of Technology, Sahand New Town, Tabriz, Iran.

## ● Research Projects:

### Current projects:

- [1] Evaluation and Optimization of Flare Performance and Combustion, South Pars Gas Field, (2011-Date).
- [2] Selection of optimal VOCs removal method from TPC wastewater treatment unit, basic and detail design of selected method and control on performance, Tabriz Petrochemical Co., (2011-Date).
- [3] Sonochemically Assisted Synthesis of Alumina Supported Nano-Catalyst for Methanol Reforming, RCRC, SUT, (2009-Date).
- [4] Synthesis of Hydrodesulfurization Nano-Catalyst Using Ultrasonic Energy, Tabriz Refinery, (2009-Date).
- [5] CO<sub>2</sub>-Reforming of Natural Gas on Innovative Catalysts Prepared via Plasma Technologies, National Iranian Oil Refining & Distribution Company, NIORDC (2008-Date).
- [6] Investigation of a Practical Method for VOC Abatement from Lost Foam Unit of ITM. CO., Iran Tractor Foundry Company, Tabriz, (2007-Date).

### Previous projects:

- [1] Thermodynamic Evaluation of Partial Oxidation of Methane for Natural Gas Utilization, RCRC, SUT (2007-2009).
- [2] Natural Gas to Methanol, Centre for Fuels and Energy, Curtin University of Technology, Perth, WA, Australia (2003-2007).
- [3] Gas to Value (G2V), Centre for Fuels and Energy (CFE), Curtin University of Technology, Prepared for Woodside Energy Limited, Perth, WA, Australia. (2003-2004).

- [4] Enhanced VOC Oxidation Using Ozone on Porous Materials, Reactor & Catalysis Research Center (RCRC), Sahand University of Technology, Sahand New Town, Tabriz, Iran (2003-2003).
- [5] Enhanced Toluene Oxidation Using the Ozone/Pt-Al<sub>2</sub>O<sub>3</sub>, Reactor & Catalysis Research Center (RCRC), Sahand University of Technology, Sahand New Town, Tabriz, Iran (2001-2003).
- [6] Removal of Air Contaminants (VOC's) by Biofiltration, Environmental Engineering Research Center, (EERC), Sahand University of Technology, Sahand New Town, Tabriz, Iran (2001-2003).
- [7] Removal of Air Contaminants (VOC's) by Catalytic Oxidation, Reactor & Catalysis Research Center (RCRC), Sahand University of Technology, Sahand New Town, Tabriz, Iran (2000-2002).
- [8] Stripping of VOC's from Petrochemical and Refinery Wastewater, Environmental Engineering Research Center, (EERC), Sahand University of Technology, Sahand New Town, Tabriz, Iran (2000-2002).
- [9] Regeneration of Hydrocracking Catalysts, Reactor & Catalysis Research Center (RCRC), Sahand University of Technology, Sahand New Town, Tabriz, Iran (1998-2000).
- [10] Preparation of Dehydration Catalysts from Natural Zeolites, Reactor & Catalysis Research Center (RCRC), Sahand University of Technology, Sahand New Town, Tabriz, Iran (1997-2000).
- [11] Regeneration of Catalysts of Melamine Process, Reactor & Catalysis Research Center (RCRC), Sahand University of Technology, Sahand New Town, Tabriz, Iran (1997-1998).
- [12] Simulation of Multicomponent Reactive Distillation, M.Sc. Thesis, Chemical Engineering Department, Isfahan University of Technology, Isfahan, Iran (1993-1995).
- [13] Temperature Distribution in Fins and Calculation of Heat loss, B.Sc. Project, Chemical Engineering Department, Shiraz University, Shiraz, Iran (1991-1992).

#### • Awards and Honors:

- 2010:** "Distinguished Chemical Engineering Academic Staff", Sahand University of Technology, Sahand New Town, Tabriz, Iran.
- 2006:** "Best Oil, Gas & Carbon Capture Project AIE Postgraduate Student Energy Award", Australia.
- 2003:** "PhD Scholarship", MSRT of Iran, Iran.
- 2002:** "Distinguished IT (E-Learning) Research Award", East Azarbaijan, Iran.
- 2002** "Distinguished Chemical Engineering Research Award", Sahand University of Technology, Sahand New Town, Tabriz, Iran.

#### • Workshops:

- [1] M. Haghghi, "Effective Presentations Using Power Point", Centre for Fuels and Energy, Curtin University of Technology, Perth, Western Australia, 2007.
- [2] M. Haghghi, "A workshop on Separation Processes", Chemical Engineering Faculty, Sahand University of Technology, Tabriz, Iran, 2003.
- [3] M. Haghghi, "Web Design & E-learning Workshop", ICT Center, Sahand University of Technology, Tabriz, Iran, 2002.
- [4] M. Haghghi, "PolyMath Workshop", Chemical Engineering Faculty, Sahand University of Technology, Tabriz, Iran, 2001.

#### • Technical Reports:

- [1] M. Haghghi, A. Babaluo, N. Rahemi and S. Allahyari, "CO<sub>2</sub>-Reforming of Natural Gas on Innovative Catalysts Prepared via Plasma Technologies", 3<sup>rd</sup> Report (Fabrication of Catalytic Pilot and Evaluation of Synthesized Catalyst Performance), Prepared for National Iranian Oil Refining & Distribution Company, NIORDC, Tehran, Iran, December 2011.
- [2] M. Haghghi, M. Ebrahiminezhad, and N. Fozooni, "Synthesis of Hydrodesulfurization Nano-Catalyst Using Ultrasonic Energy", First Report (Literature Review), Prepared for Tabriz Refinery, NIORDC, Tabriz, Iran, March 2011.
- [3] M. Haghghi, A. Babaluo, N. Rahemi and S. Allahyari, "CO<sub>2</sub>-Reforming of Natural Gas on Innovative Catalysts Prepared via Plasma Technologies", 2<sup>nd</sup> Report (Catalyst Synthesis Using Plasma Technology

and Their Characterization), Prepared for National Iranian Oil Refining & Distribution Company, NIORDC, Tehran, Iran, December 2009.

- [4] M. Haghghi, A. Babaluo, N. Rahemi and S. Allahyari, "CO<sub>2</sub>-Reforming of Natural Gas on Innovative Catalysts Prepared via Plasma Technologies", First Report (Literature Review), Prepared for National Iranian Oil Refining & Distribution Company, NIORDC, Tehran, Iran, February 2009.
- [5] M. Haghghi, "Thermodynamic Evaluation of Partial Oxidation of Methane for Natural Gas Utilization", Final Report, Prepared for Sahand University of Technology, Tabriz, Iran, 2009.
- [6] M. Haghghi, E. Fatehifar and A. Ebadi, "Investigation of a Practical Method for VOC Abatement from Lost Foam Unit of ITM. Co.", First Report (Literature Review), Prepared for Iran Tractor Foundry Co., Tabriz, Iran, 2007.
- [7] M. Haghghi, "Catalytic Partial Oxidation of Methane for Direct Conversion of Natural Gas to Methanol", PhD Thesis, Centre for Fuels and Energy, Curtin University of Technology, Perth, Western Australia, 2007.
- [8] M. Haghghi, J. Bromly and D. Zhang, "Gas to Value Final Report: Evaluation of Selected Options for Utilisation of Associated and Stranded Gas", Report prepared for Woodside Energy Limited, Curtin University of Technology, Perth, Western Australia, November 2004.
- [9] M. Haghghi, J. Bromly and D. Zhang, "Gas to Value Report II: An Assessment of Technical Status of Selected Options for Utilisation of Associated and Stranded Gas", Report prepared for Woodside Energy Limited, Curtin University of Technology, Perth, Western Australia, April 2004.
- [10] M. Haghghi, J. Bromly and D. Zhang, "Gas to Value Report I: Utilisation Options of Remote and Stranded Gas - An Initial Assessment", Report prepared for Woodside Energy Limited, Curtin University of Technology, Perth, Western Australia, February 2004.
- [11] M. Haghghi, S. Shafiei, A. T. Khudiev, "Enhanced VOC Oxidation Using Ozone on Porous Materials", Faculty of Chemical Engineering, Sahand University of Technology, Tabriz, Iran, 2003.
- [12] M. Haghghi, J. Soltan Mohammadzadeh, A. T. Khudiev, "Stripping of VOC's from Petrochemical and Refinery Wastewater", Faculty of Chemical Engineering, Sahand University of Technology, Tabriz, Iran, 2002.
- [13] M. Haghghi, J. Soltan Mohammadzadeh, A. T. Khudiev, "Removal of Air Contaminants (VOC's) by Catalytic Oxidation", Chemical Engineering Faculty, Sahand University of Technology, Tabriz, Iran, 2002.
- [14] M. Haghghi, A. T. Khudiev, "Regeneration of Hydrocracking Catalysts", Chemical Engineering Faculty, Sahand University of Technology, Tabriz, Iran, 2000.
- [15] M. Haghghi, A. T. Khudiev, "Preparation of Dehydration Catalysts from Natural Zeolites of Iran", Chemical Engineering Faculty, Sahand University of Technology, Tabriz, Iran, 2000.
- [16] M. Haghghi, "Simulation of Multicomponent Reactive Distillation", M.Sc. Thesis, Department of Chemical Engineering, Isfahan University of Technology, Isfahan, Iran, 1995.
- [17] M. Haghghi, "Temperature Distribution in Fins and Calculation of Heat loss", B.Sc. Project, Department of Chemical Engineering, Shiraz University, Shiraz, Iran, 1992.

## • Patents:

- [1] M. Haghghi, S. Allahyari and N. Rahemi, "Synthesis of Pt/CeO<sub>2</sub> Nano-Catalyst Using Ultrasound for Wet-Air Oxidation of Phenol", Iranian Patent 58936, 2009.
- [2] M. Haghghi, N. Rahemi and S. Allahyari, "Synthesis of Cobalt-Molybdenum on Carbon Supported Catalyst by Using Ultrasonic Energy for Hydrodesulfurization Process", Iranian Patent 58937, 2009.
- [3] M. Haghghi, E. Fatehifar and Z. Abbasi, "Synthesis of Cerium Oxide Nano Catalyst for Removal of Volatile Organic Compounds in Catalytic Oxidation Process", Iranian Patent 59151, 2009.
- [4] M. Haghghi, E. Fatehifar, Z. Abbasi and N. Rahemi, "Low Pressure Multi-propose Catalytic Oxidation Pilot for Removing Volatile Organic Compounds from Polluted Air", Iranian Patent 59149, 2009.
- [5] M. Haghghi, E. Fatehifar and Z. Abbasi, "Synthesis of CeO<sub>2</sub>/Al<sub>2</sub>O<sub>3</sub> Nanocomposite for Complete Oxidation of Toluene", Iranian Patent 59976, 2009.
- [6] M. Haghghi, E. Fatehifar and Z. Abbasi, "Synthesis of Pt/CeO<sub>2</sub> Nanocatalyst for Treatment of Waste Gas Streams", Iranian Patent 59975, 2009.

- [7] M. Haghghi, N. Rahemi and Z. Abbasi, "Low Pressure Pilot for Heterogeneous Catalyst Screening", Iranian Patent 59977, 2009.
- [8] M. Haghghi, N. Rahemi and S. Allahyari, "Ultrasound Assisted CoMo/Al<sub>2</sub>O<sub>3</sub> Nano-catalyst Synthesis for Elimination of Sulfur Compounds from Fossil Fuels", Iranian Patent 61917, 2009.
- [9] M. Haghghi, S. Allahyari and N. Rahemi, "Catalytic Wet Air Oxidation of Phenolic Wastewaters Using Sonosynthesized Ru/CeO<sub>2</sub> Catalyst", Iranian Patent 61918, 2009.
- [10] M. Haghghi, E. Fatehifar, L. Karimnezhad and N. Rahemi, "Abatement of VOCs from Polluted Air Using Impregnated Carbon Active with ZnCl<sub>2</sub>", Iranian Patent 61919, 2009.
- [11] M. Haghghi, S. Vosough Mahmoudi and H. Morshedi, "Thermal Oxidation Pilot for Abatement of Volatile Organic Compounds from Polluted Air", Iranian Patent 65660, 2010.
- [12] M. Khatamian, M. Haghghi and M. Ghadiri, "Catalytic Pilot for Dehydrogenation of Ethylbenzene to Styrene", Iranian Patent 64927, 2010.
- [13] M. Haghghi, A. A. Babaluo and M. Abdollahifar, "Synthesis of Ni-Co/Al<sub>2</sub>O<sub>3</sub>-MgO Nanocatalysts Using Ultrasound Energy for Reforming of CH<sub>4</sub>/CO<sub>2</sub>", Iranian Patent (submitted 2011).
- [14] M. Haghghi, E. Fatehifar and L. Karimnezhad, "Activated Carbon Synthesis from Walnut Shell via H<sub>3</sub>PO<sub>4</sub> Impregnation Used for Toluene Abatement from Polluted Air", Iranian Patent (submitted 2010).
- [15] M. Haghghi, A. Alizadeh and N. Rahemi, "High Pressure Hydrothermal Batch Reactor", Iranian Patent (submitted 2010).
- [16] M. Haghghi and N. Rahemi, "Non-Thermal Plasma Pilot for Heterogeneous Catalyst Treatment", Iranian Patent (submitting 2011).
- [17] M. Haghghi, E. Fatehifar and Z. Abbasi, "Synthesis of Pt/Al<sub>2</sub>O<sub>3</sub>-CeO<sub>2</sub> Nanocatalyst for Abatement of BTX in Polluted Air", Iranian Patent (submitting 2011).
- [18] M. Haghghi, J. S. Soltanmohammadzadeh, B. Pourabas and M.S. Ghodrati, "Using Ultrasonic Energy for Preparation of CdSe/TiO<sub>2</sub> nanophotocatalyst for Removal of Phenol in Water under Solar Light Irradiation", Iranian Patent (submitting 2011).

#### • **Book Translation:**

- [1] Petrochemical Processes I, Synthesis Gas Derivatives and Major Hydrocarbons, Technical and Economic Characteristics, A. Chauvel, G. Lefebvre, Gulf Publishing Company Book Division, Houston, Texas, USA, Translated to Persian by M. Haghghi, 2003.
- [2] Petrochemical Processes II, Major Oxygenated, Chlorinated and Nitrated Derivatives, Technical and Economic Characteristics, A. Chauvel, G. Lefebvre, Gulf Publishing Company Book Division, Houston, Texas, USA, Translated to Persian by M. Haghghi and S. Shafiei, 2009.

#### • **Publications & Presentations:**

- [1] M. Abdollahifar, M. Haghghi and R. Alizadeh, "Thermodynamic Equilibrium Modeling of Tri-Reforming of Methane", Iranian Journal of Chemical Engineering, 2001 (Accepted).
- [2] M. Abdollahifar and M. Haghghi, "Methanol Potentials as Future Energy Recourse in Fuel Cell Technologies", The Oil, Gas and Energy Journal, Y2, No 6, March-April 2011.
- [3] A. Alizadeh Eslami, M. Haghghi, N. Rahemi and S. Nasiri Laheghic, "Sol-Gel Synthesis and Characterization of Ni/Al<sub>2</sub>O<sub>3</sub> Nano-Catalysts Doped with Co and Cu", AIP Conference Proceedings, The American Institute of Physics, AIP, 1315(1), pp. 1297-1302, 2011.
- [4] M. Abdollahifar and M. Haghghi, "Thermodynamic Evaluation of Methane Conversion to Alcohols", Journal of Farayandno, No. 28, pp. 59-66, September-October 2010.
- [5] M. Ebrahimynejad and M. Haghghi, "Evaluation of Fluorine Addition on Catalytic Performance of Hydrodesulfurization Catalysts for Deep Desulfurization of Gasoline and other Petroleum Fractions", Journal of Farayand, 2011 (Accepted).
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