Alireza Bahramian, PhD

Personal information:

Date of birth: May 28, 1978
Place of birth: Hamedan, Iran
Marital status: Married, No children
Language skills: Persian, English

Address:

University: Chemical Engineering Department, Hamedan University of Technology, Hamedan, Iran. P.O. Box, 65155.

E-mail: bahramian@aut.ac.ir abahramian57@gmail.com

Mobile Phone:

Education:

Ph.D. (2005-2009) Chemical Engineering, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran.
Thesis title: Investigations into Fluidization of TiO_2 Nanoparticles Prepared in a Fluidized Bed Dryer and Computer Simulation Using CFD

M. Sc. (2002-2004) Chemical Engineering, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran.
Thesis title: Investigation into Drying of Titanium dioxide in Pilot Plant Spouted Bed Dryer

B.Sc. (1998-2002) Applied Chemistry, Bu-Ali Sina University, Hamedan, Iran
Thesis title: Synthesis of TiO_2 Nanoparticles Using Sol-gel Process

Experiences:

- Associate professor of Chemical Engineering, Department of Chemical Engineering, Hamedan University of Technology, Hamedan, Iran (2014-2016)
- Assistant Professor of Chemical Engineering, Department of Chemical Engineering, Hamedan University of Technology, Hamedan, Iran (2009-2014).
- Founder and Head of Department of Chemical Engineering, Hamedan University of Technology, Hamedan, Iran (2009-2014)
- Guest Researcher at Department of Chemical Engineering, University of the Basque Country, Bilbao, Spain (April-September 2009). Supervisor: Prof. Martin Olazar.
- Adjacent Professor at Sharif University of Technology, Tehran, Iran (2013).
- Assistant Researcher at Optic and Laser School of Iran (2006-2010).
- Selected Researcher for Asia Nano Camp. National University of Singapore and University of Science of Malaysia (Fall 2010)

Teaching experiences:

Undergraduate courses:

Fluid Mechanics (I and II), Thermodynamics for Chemical Engineers (I and II), Calculation of Refinery Engineering, Principles of Management in Chemical Process, Principles of Mass and Energy Balance, Application of Mathematics in Chemical Engineering, Unit Operation, Laboratory of Fluid Mechanics

Graduate courses:

Advanced Fluid Mechanics, Advanced Thermodynamics, Seminar

Laboratory experiences:

- Construction of laboratories for undergraduate students, Hamedan University of Technology. (Fluid Mechanics, Heat Transfer and Unit Operation Laboratory).

Individual Skills

- Familiar with Engineering Software's such as, C^{++}, Aspen, MATLAB, Hysis, FORTRAN, Chem-Office and Office.
- Familiar with Mechanical Engineering Software: Fluent, CFD simulation, DEM simulation, MFIX.
- Ability to work with SEM, AFM, UV-vis, XRD, GC-MS equipments.

Interested research areas and subjects:

- CFD simulation of Fluidized beds
- Molecular dynamics Simulation of Thin Films and Materials
- Water and Wastewater Treatment
- Synthesis and Characterization of Nanomaterials
- Fabrication of Dye-sensitized Solar cells and Photovoltaic Cells

Awards and Distinctions:

- 1^{st} Top Undergraduate Students
- 2^{th} Top Graduate Students
- PhD Scholarship, Iranian Ministry of Science, Research and Technology (2005-2009).
- 1^{st} Top Researcher of Hamedan University of Technology (2012 and 2014)
- 1^{st} Top Researcher of Chemical Engineering Department (2011 and 2013)
- The Excellent Educational Member, Department of Chemical Engineering, Hamedan University of Technology. (2012)
- 1^{st} Top Researcher of Hamedan University of Technology (2015)

Industrial/Research Projects:

- Compilation of technical knowledge on recycling PET bottles to produce UV-resistant greenhouse coatings by PET/SiO_2/TiO_2 hybrid nanocomposites prepared by sol-gel method, INSF, 97012847, (2020).
- Investigation of Novel Methods of Neutralization and Coping with Bioterrorism Threats and Chemical and Microbial Contaminants in Drinking Water Facilities of Hamadan Province, Hamedan Province Water & Wastewater Co. 98/122/C, (2019).
- Determination of gas velocity profiles in a transit-time ultrasonic flowmeter: Evaluation of CFD simulation results using operating data, Gas Company, (2016).
- Investigation into Formation of Aldehides and Ketones from Ozonation Process in Water Treatment, Power Ministry of Iran. (2013-2014).
- Molecular Dynamics Simulation of TiO_2/Polyaniline Thin Films, Hamedan University of Technology, (2010-2012)
- Fabrication of Semiconductor Nanostructured Films, Optic and Laser School of Iran. (2008-2009).
- Study of fluidization of TiO_2 particles prepared in a Spray dryer by CFD simulation, Jahad Kershavarzi, Agriculture Jahad Research Center (2006-2007).

Article Review for Journals:

- Journal of American Institute of Chemical Engineers (AIChE Journal), John Willey.
- Powder Technology, Elsevier.
- Environmental Progress and Sustainable Energy, John Wiley.
- Chemosphere, Elsevier.
- The international Journal Advances in Industrial Engineering and Management, American Scientific Publishers
- Chemical Engineering Research and Design
- Fuel, Elsevier.
- Surface and Coatings Technology, Elsevier.
- Environmental Progress & Sustainable Energy, John Wiley.
- Material Chemistry C, Royal Society of Chemistry

Publication (Book):

Fluid Mechanics with Laboratory Viewpoint" by: Dr. **A. Bahramian**, Jahad-Daneshghahi, Iranian Scientific Publisher, **2013**.

Publications (Journals):

1- **A. Bahramian and M. Olazar,** Fluidization of Polydisperse Cohesive TiO_2 Agglomerates in a Conical Fluidized Bed: Evaluation of Restitution and Friction Coefficients on the Velocity Fields using Adhesive CFD-DEM Simulation, Submitted to journal of "*AIChE journal*"

2- **A. Bahramian,** Application of the Force Balance Model and Fractal Scaling Analysis for Size Estimation of the Complex-Agglomerates in a Conical Fluidized Bed, *Iranian, Chem. And Chem. Eng*. (**2020**). doi: 10.30492/ijcce.2020.38038

3- **A. Bahramian,** Poly(ethylene terephthalate)-based nanocomposite films as greenhouse covering material: Environmental sustainability, mechanical durability, and thermal stability, *Applied Polymer Science*, **2020**, DOI: 10.1002/app.49 991

4- **A. Bahramian,** The effect of thermal and non-thermal routes on treatment of the Mg-Al layered double hydroxide catalyst dispersed by titania nanoparticles in products distribution arising from poly(ethylene terephthalate) degradation, *Polymer Degradation and Stability* 179 (**2020**) 109243.

5- **A. Bahramiana, D. D. Dionysiou**, Photocatalytic Assessment of Selective Distribution of Product Arising from Methanol Oxidation on Platinum-deposited TiO_2 Mesoporous Layer in a Fixed-film UV Reactor, *Journal of Photochemistry & Photobiology, A: Chemistry* 403 (**2020**) 112868.

6- **B. Medi, A. Bahramian, V. Nazari,** Synthesis and Characterization of Conducting Polyaniline Nanostructured Thin Films for Solar Cell Applications, *The Journal of Minerals, Metals & Materials (JOM)*, **2020**, https://doi.org/10.1007/s11837-020-04361-8

7- **A. Bahramian, M. Rezaeivala, K. He, D D. Dionysiou,** Enhanced visible-light photoelectrochemical hydrogen evolution through degradation of methyl orange in a cell based on coral-like Pt-deposited TiO_2 thin film with sub-2 nm pores, *Catalysis Today* 335 (**2019**) 333-344.

8- **A. Bahramian,** Effect of Drying Temperature and Mechanical Pressure on Surface Structure and Dynamical Properties of Polyaniline Nanostructured Film, *Applied Research in Chemical Polymer Engineering*, 2 (**2018**) 3-16.

9- **A. Bahramian**, The Effect of Tin Weight Fraction and Annealing Condition on Electrical and Optical Properties of ITO/TiO_2 Nanostructured Film, *Int. J. Nanosci. Nanotechnol*., 14 (**2018**) 307-317.

10- **A. Bahramian**, The mutual effects between the interparticle forces and mechanical properties on fluidization of TiO_2 nanoparticle agglomerates in a conical fluidized bed: nanoindentation and pressure fluctuation analysis, *J. Nanopart. Res* (**2018**) 21:196.

11- **Sh.Hamidifard, A. Bahramian, M. Rasteh,** Mesh sensitivity analysis on hydrodynamics behavior of a fluidized bed containing silver oxide nanoparticle agglomerates: Transition from bubbling to slugging and turbulent flow regimes, *Powder Technology* 331 (**2018**) 28–40.

12- **A. Bahramian**, Molecular interactions insights underlying temperature-dependent structure of water molecules on TiO_2 nanostructured film: A computational study using reactive and non-reactive force fields, *Fluid Phase Equilibria* 438 (**2017**) 53- 66.

13- **A. Bahramian, M. Maleki, B. Medi,** CFD Modeling of Flame Structures in a Gas Turbine Combustion Reactor: Velocity, Temperature, and Species Distribution, *International Journal of Chemical Reactor Engineering*, 2017, DOI**:** https://doi.org/10.1515/ijcre-2016-0076

14- **Sh. Niazi, M Kalbasi, A Bahramian,** Full scale experimental study of an ozonation reactor: Effects of seasonal water characteristics and operating conditions on total organic carbon removal, aldehydes and ketones formation as well as disinfection efficiency, *Journal of Environmental Chemical Engineering*, 5 (**2017**) 1536-1547.

15- **Sh. Nizai, M. Kalbasi, A. Bahramian,** Hydraulic and disinfection efficiency of an ozonation contactor for a municipal water treatment plant using computational fluid dynamics, *The Canadian Journal of Chemical Engineering*, **2017**, 5 MAY 2017, DOI: 10.1002/cjce.22839

16- **A. Bahramian, J. R. Grace,** Fluidization of titania nanoparticle agglomerates in a bench-scale conical vessel, *Powder Technology* 310 (2017) 46–59.

17- **A. Bahramian**, Enhanced Photocatalytic Activity of Sol-Gel Derived Coral-like TiO_2 Nanostructured Thin Film, *Iran J. Chem. & Chem. Eng.* 35 **(2016)** 27-35.

18- **A. Bahramian**, A molecular view on a polyaniline–TiO_2 nanostructured thin film: Effect of temperature and pressure on the thermal, mechanical, and dynamical properties, *Thin Solid Films* 592 **(2015)** 39–53.

19- **A. Bahramian**, Daryoosh Vashaee, In-situ fabricated transparent conducting nano fiber-shape polyaniline/coral-like TiO_2 thin film: Application in bifacial dye-sensitized solar cells, *Solar Energy Materials & Solar Cells* 143 **(2015)** 284–295.

20- M. Rasteh, F. Farhadi, **A. Bahramian**, Hydrodynamic characteristics of gas–solid tapered fluidized beds: Experimental studies and empirical models, *Powder Technology* 283 **(2015)** 355–367.

21- **A. Bahramian,** CFD Insight of the Flow Dynamics and Velocity Fields in a Gas Turbine Combustor with a Swirl Flame, Accepted for publish in Iranian *Journal of Chemical Engineering*, **2015.**

22- **A. Bahramian,** Hydrodynamic Characteristics of Dense Conical Fluidized Bed: CFD Simulation and Experimental Verification, *Iranian Journal of Chemical Engineering*, Vol. 12, No. 1 **(2015)** 41-58.

23- **A. Bahramian**. Viscoelastic Properties of Polyaniline-emeraldine Base Nanostructured Films: Experimental Results and Computational Simulations**.** Accepted for *Journal of Applied Polymer Science*. 32 **(2015)** 41858.

24- **A. Bahramian**. "Molecular Dynamics Simulation of Surface Morphology and Thermodynamic Properties of Polyaniline Nanostructured Film", *Surface & Interface Analysis.* 47 (**2015)** 1-14.

25- **A. Bahramian**. "The Effect of Heat Treatment on the Surface Structure of Polyaniline Nanostructured Film: an Experimental and Molecular Dynamics Approach", *Applied Surface Science*, 311 **(2014)** 508–520.

26- **A. Bahramian**. "High Conversion Efficiency of Dye-sensitized Solar Cells Based on Coral-like TiO_2 Nanostructured Films: Synthesis and Physical Characterization". *Industrial & Engineering Chemistry Research (ACS Publications)*, 52 **(2013**) 14837−14846.

27- **A. Bahramian**, M. Olazar, and G. Ahmadi. "Effect of Slip Boundary Conditions on the Simulation of Micro-particle Velocity Fields in a Conical Fluidized Bed". *AIChE Journal*, 59 **(2013)** 4502-4518.

28- **A. Bahramian**. "Study on Growth Rate of TiO_2 Nanostructured Thin Films: Simulation by Molecular Dynamics Approach and Modeling by Artificial Neural Network". *Surface & Interface Analysis*, 45 **(2013)** 1727– 1736.

29- **A. Bahramian**, H. Ostadi and M. Olazar. "Evaluation of Drag Models for Predicting the Fluidization Behavior of Silver Oxide Nanoparticle Agglomerates in a Fluidized Bed". *Industrial & Engineering Chemistry Research (ACS Publications)*, 52 **(2013**) 7569–7578.

30- **A. Bahramian** and M. Olazar. "Fluidization of Micronic Particles in a Conical Fluidized Bed: Experimental and Numerical. Study of Static Bed Height Effect". *AIChE Journal*, 58 **(2012)** 730-744.

31- **A. Bahramian**, and M. Olazar. "Profiling Solid Volume Fraction in a Conical Bed of Dry Micrometric Particles: Measurements and Numerical Implementations. *Powder Technology*, 212 **(2011)** 181–192.

32- E. Zaminpayma, **A. Bahramian**, H. Erfan Nia and M. Kalbasi. "Computer Simulation on TiO_2 Nanostructure Films and Experimental Study Using Sol-gel Method" *Journal of Cluster Science*, 20 **(2010)** 641-649.

33- **A. Bahramian** and M. Kalbasi "CFD modeling of TiO_2 Nano-Agglomerates Hydrodynamics in a Conical Fluidized Bed Unit with Experimental Validation" *Iranian J. Chemistry & Chemical Engineering*, 29 **(2010)** 1-17.

34- **A. Bahramian**, M. Kalbasi and M. Olazar."Influence of Boundary Conditions on CFD Simulation of Gas-particle Hydrodynamics in a conical Fluidized Bed unit", *International Journal of Chemical Reactor Engineering*, 7, (**2009**) A60.

35- M. Sasani Ghamsari and **A. Bahramian**. "High Transparent Sol–gel Derived Nanostructured TiO_2 thin film". *Materials Letters*, 62 **(2008)** 361-364. (This paper selected as "8th Top hottest Paper" in *Materials Letters* 2008)

36- M. Kalbasi, **A. Bahramian** and J. Khorshidi. "Prediction of Minimum Spout Velocity and Moisture Distribution of Potasium Chlorate Particles in a Spouted Bed Dryer". *Iranian J Chemistry & Chemical Engineering*, 26 **(2007)** 1-12.

37- J. Khorshidi, M. Kalbasi, **A. Bahramian** and M. Sohrabi, "Application and modeling of Methane Oxidation Reaction to Formaldehyde in a Fluidized Bed Reactor. *Iranian J Chemistry & Chemical Engineering*, 25 **(2006)** 14-21.

Publications (Conferences):

1- M. Rasteh, F. Frahadi, **A. Bahramian**. Study on hydrodynamic behavior of TiO_2 microparticles in a fluidized bed, The 6th International conference in application of CFD in industry, Esfahan, Iran, 14-17 May, **2015**.

2- **A. Bahramian** and M. Olazar. "Fluidization of Nanoparticle Agglomerates in a Fluidized Bed: an Experimental Study and CFD Simulation". The 8th International Chemical Engineering Congress & Exhibition (IChEC) Kish, Iran, 24-27 February, **2014**.

3- **A. Bahramian**. "A Study on TiO_2 Nanostructured Thin Films: Computer Simulation with Molecular Dynamics View and Experimental Work with Sol-gel Method". Asia Nano Camp. Singapore & Malaysia. 3-5 October **2011**.

4- **A. Bahramian**, M. Kalbasi, H. Nazif, and I. Khazaee, "Hydrodynamic Characteristics of TiO_2 Nanoparticles in a conical fluidized bed and numerical simulation using CFD modeling", 17th annual (International) Conference on mechanical engineering-ISME 2009, Tehran, Iran. May **2009**.

5- E. Jamshidi Sr., **A. Bahramian**, "Numerical Method (Quantize) for Prediction of Pollutant in River Simulated by Gas Chromatography Measurement", AIChE Conference, Spring National Meeting, Developing Environmental For study through Computational Chemistry and Modeling (TAZ11), New Orleans, United States, 8 April **2008**.

6- E. Jamshidi Sr., **A. Bahramian**, "New Mathematical Method for Prediction of Pollutant in River Simulated by Gas Chromatography Measurement", AIChE Conference, Spring National Meeting, Developing Environmental For study through Computational Chemistry and Modeling (TAZ10), New Orleans, United States, 8 April **2008**.

7- M. Sasani Ghamsari and **A. Bahramian**. "Preparation of the Nanostructure TiO_2 Thin Film with Dip-Coating Method" Iranian conference of physics. Proceeding of 5th Iranian Physics Conference, Shahroud, Iran. **2007**.

8- M. Kalbasi and **A. Bahramian**. "Hydrodynamics and drying characteristics of Potasium Chlorate particles in a spouted bed dryer", IWSID Symposium, India. 20-23rd December **2004**.

References

1- Professor Martin Olazar
Department of Chemical Engineering, Faculty of Science and Technology
University of the Basque Country. P.O. Box 644, 48080 Bilbao, Spain
Phone: 946 012 527 www.ehu.es/cpwv
E-mail: martin.olazar@ehu.es

2- Professor Goodarz Ahamdi
Dean, Wallace H. Coulter School of Engineering. Clarkson Distinguished Professor.
Robert R. Hill '48 Professor of Mechanical and Aeronautical Engineering, 102
CAMP Clarkson University.
P.O. Box 5725. Potsdam, NY 13699-5725
Phone: 315-268-2322 Fax: 315-268-4494
E-mail: ahmadi@clarkson.edu

3- Professor Javad Saien
Professor in Chemical Engineering at Bu-Ali Sina University, Hamedan, Iran
E-mail: saien@basu.ac.ir

4- Professor Daryoosh Vashaee
Professor in Department of Electrical and Computer Engineering, North Carolina State University, Raleigh, NC 27695, USA