Ghasem Bahlakeh

Assistant Professor at Golestan University (GU)
Department of Chemical Engineering,
Golestan, Iran

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Personal Information

Nationality: Iranian
Date of Birth: July 07, 1985
Place of Birth: Maraveh Tappeh, Golestan, Iran
Gender: Male
Marital status: Married

Educational Background

2009 - 2013 Amirkabir University of Technology (AUT), Tehran, Iran

Ph.D. Chemical Engineering

GPA: 18.32/20

Dissertation: Molecular simulation of polymer electrolyte membranes for direct methanol fuel cell applications

2007- 2009 Amirkabir University of Technology (AUT), Tehran, Iran

M.Sc., Chemical Engineering

GPA: 17.70/20

Thesis: Mathematical modeling and simulation of planar solid oxide fuel cells

2003 - 2007 Amirkabir University of Technology, Mahshahr branch, Khouzestan, Iran

B.Sc., Chemical Engineering

Thesis: Investigation of effective parameters on the reverse osmosis membranes in industrial water treatment process

Research interest

- Molecular simulation (Monte Carlo and molecular dynamics) of polymeric membranes
- Computational studies of drug delivery systems
- Experimental and theoretical studies of corrosion inhibition of metals using inhibitors and conversion coatings
- Theoretical evaluations of graphene and graphene oxide for various applications

Teaching courses

- Advanced Mathematics and Mass Transfer
- Mathematics in Chemical Engineering
- Process Control
- Numerical Mathematics

Publications

Journal Papers

[1] Mohammad Ramezanzadeh, Ghasem Bahlakeh, Zahra Sanaei, Bahram Ramezanzadeh. Corrosion inhibition of mild steel in 1 M HCl solution by ethanolic extract of eco-friendly Mangifera indica (mango) leaves: Electrochemical, molecular dynamics, Monte Carlo and ab initio study. Applied Surface Science. 2019;463:1058-77.
[2] Sadegh Ralkhal, Taghi Shahrabi, Bahram Ramezanzadeh, Ghasem Bahlakeh. A combined electrochemical, molecular dynamics, quantum mechanics and XPS analysis of the mild steel surface protected by a complex film composed of neodymium (III) and benzimidazole. Applied Surface Science. 2019;464:178-94.
[3] Niloufar Notghi Taheri, Bahram Ramezanzadeh, Mohammad Mahdavian, Ghasem Bahlakeh. In-situ synthesis of Zn doped polyaniline on graphene oxide for inhibition of mild steel corrosion in 3.5wt.% chloride solution. Journal of Industrial and Engineering Chemistry. 2018;63:322-39.
[4] Mohammad Ramezanzadeh, Zahra Sanaei, Ghasem Bahlakeh, Bahram Ramezanzadeh. Highly effective inhibition of mild steel corrosion in 3.5% NaCl solution by green Nettle leaves extract and synergistic effect of eco-friendly cerium nitrate additive: Experimental, MD simulation and QM investigations. Journal of Molecular Liquids. 2018;256:67-83.
[5] Mohammad Ramezanzadeh, Ghasem Bahlakeh, Zahra Sanaei, Bahram Ramezanzadeh. Studying the Urtica dioica leaves extract inhibition effect on the mild steel corrosion in 1 M HCl solution: Complementary experimental, ab initio quantum mechanics, Monte Carlo and molecular dynamics studies. Journal of Molecular Liquids. 2018;272:120-36.

[6] Mohammad Ramezanzadeh, Morteza Asghari, Bahram Ramezanzadeh, Ghasem Bahlakeh. Fabrication of an efficient system for Zn ions removal from industrial wastewater based on graphene oxide nanosheets decorated with highly crystalline polyaniline nanofibers (GO-PANI): Experimental and ab initio quantum mechanics approaches. Chemical Engineering Journal. 2018;337:385-97.
[7] Bahram Ramezanzadeh, Ghasem Bahlakeh, Mohammad Ramezanzadeh. Polyaniline-cerium oxide (PAni-CeO2) coated graphene oxide for enhancement of epoxy coating corrosion protection performance on mild steel. Corrosion Science. 2018;137:111-26.
[8] Bahram Ramezanzadeh, Ghasem Bahlakeh, M. H. Mohamadzadeh Moghadam, Rooshanak Miraftab. Impact of size-controlled p-phenylenediamine (PPDA)-functionalized graphene oxide nanosheets on the GO-PPDA/Epoxy anti-corrosion, interfacial interactions and mechanical properties enhancement: Experimental and quantum mechanics investigations. Chemical Engineering Journal. 2018;335:737-55.
[9] M. J. Palimi, E. Alibakhshi, B. Ramezanzadeh, G. Bahlakeh, M. Mahdavian. Screening the anti-corrosion effect of a hybrid pigment based on zinc acetyl acetonate on the corrosion protection performance of an epoxy-ester polymeric coating. Journal of the Taiwan Institute of Chemical Engineers. 2018;82:261-72.
[10] Nako Nakatsuka, Mohammad Mahdi Hasani-Sadrabadi, Kevin M. Cheung, Thomas D. Young, Ghasem Bahlakeh, Alireza Moshaverinia, Paul S. Weiss, Anne M. Andrews. Polyserotonin Nanoparticles as Multifunctional Materials for Biomedical Applications. ACS nano. 2018;12:4761-74.
[11] Z. Mahidashti, B. Ramezanzadeh, G. Bahlakeh. Screening the effect of chemical treatment of steel substrate by a composite cerium-lanthanum nanofilm on the adhesion and corrosion protection properties of a polyamide-cured epoxy coating; Experimental and molecular dynamic simulations. Progress in Organic Coatings. 2018;114:188-200.
[12] M. Mahdavian, H. Yari, B. Ramezanzadeh, G. Bahlakeh, M. Hasani. Immobilization of ultraviolet absorbers on graphene oxide nanosheets to be utilized as a multifunctional hybrid UV-blocker: A combined density functional theory and practical application. Applied Surface Science. 2018;447:135-51.
[13] Mojtaba Kasaeian, Ebrahim Ghasemi, Bahram Ramezanzadeh, Mohammad Mahdavian, Ghasem Bahlakeh. A combined experimental and electronic-structure quantum mechanics approach for studying the kinetics and adsorption characteristics of zinc nitrate hexahydrate corrosion inhibitor on the graphene oxide nanosheets. Applied Surface Science. 2018;462:963-79.
[14] Pooneh Haghdadeh, Mehdi Ghaffari, Bahram Ramezanzadeh, Ghasem Bahlakeh, Mohammad Reza Saeb. The role of functionalized graphene oxide on the mechanical and anti-corrosion properties of polyurethane coating. Journal of the Taiwan Institute of Chemical Engineers. 2018;86:199-212.
[15] Ghasem Bahlakeh, Bahram Ramezanzadeh, Mohammad Ramezanzadeh. New detailed insights on the role of a novel praseodymium nanofilm on the polymer/steel interfacial adhesion bonds in dry and wet conditions: An integrated molecular dynamics simulation and experimental study. Journal of the Taiwan Institute of Chemical Engineers. 2018;85:221-36.
[16] Najmeh Asadi, Mohammad Ramezanzadeh, Ghasem Bahlakeh, Bahram Ramezanzadeh. Utilizing Lemon Balm extract as an effective green corrosion inhibitor for mild steel in 1M HCl solution: A detailed experimental, molecular dynamics, Monte Carlo and quantum mechanics study. Journal of the Taiwan Institute of Chemical Engineers. 2018.
[17] Eiman Alibakhshi, Mohammad Ramezanzadeh, Ghasem Bahlakeh, Bahram Ramezanzadeh, Mohammad Mahdavian, Milad Motamedi. Glycyrrhiza glabra leaves extract as a green corrosion inhibitor for mild steel in 1 M hydrochloric acid solution: Experimental, molecular dynamics, Monte Carlo and quantum mechanics study. Journal of Molecular Liquids. 2018;255:185-98.
[18] Zahra Sanaei, Ghasem Bahlakeh, Bahram Ramezanzadeh. Active corrosion protection of mild steel by an epoxy ester coating reinforced with hybrid organic/inorganic green inhibitive pigment. Journal of Alloys and Compounds. 2017;728:1289-304.

[19] Mohammad Reza Saeb, Milad Nonahal, Hadi Rastin, Meisam Shabanian, Mehdi Ghaffari, Ghasem Bahlakeh, Samira Ghiyasi, Hossein Ali Khonakdar, Vahabodin Goodarzi, Poornima Vijayan P, Debora Puglia. Calorimetric analysis and molecular dynamics simulation of cure kinetics of epoxy/chitosan-modified Fe3O4 nanocomposites. Progress in Organic Coatings. 2017;112:176-86.
[20] B. Ramezanzadeh, P. Kardar, G. Bahlakeh, Y. Hayatgheib, M. Mahdavian. Fabrication of a Highly Tunable Graphene Oxide Composite through Layer-by-Layer Assembly of Highly Crystalline Polyaniline Nanofibers and Green Corrosion Inhibitors: Complementary Experimental and First-Principles Quantum-Mechanics Modeling Approaches. The Journal of Physical Chemistry C. 2017;121:20433-50.
[21] Bahar Nikpour, Bahram Ramezanzadeh, Ghasem Bahlakeh, Mohammad Mahdavian. Synthesis of graphene oxide nanosheets functionalized by green corrosion inhibitive compounds to fabricate a protective system. Corrosion Science. 2017;127:240-59.
[22] R. Miraftab, B. Ramezanzadeh, G. Bahlakeh, M. Mahdavian. An advanced approach for fabricating a reduced graphene oxide-AZO dye/polyurethane composite with enhanced ultraviolet (UV) shielding properties: Experimental and first-principles QM modeling. Chemical Engineering Journal. 2017;321:159-74.
[23] Roshanak Miraftab, Behzad Karimi, Ghasem Bahlakeh, Bahram Ramezanzadeh. Complementary experimental and quantum mechanics approaches for exploring the mechanical characteristics of epoxy composites loaded with graphene oxide-polyaniline nanofibers. Journal of Industrial and Engineering Chemistry. 2017;53:348-59.
[24] Ghasem Bahlakeh, Mohammad Ramezanzadeh, Bahram Ramezanzadeh. Experimental and theoretical studies of the synergistic inhibition effects between the plant leaves extract (PLE) and zinc salt (ZS) in corrosion control of carbon steel in chloride solution. Journal of Molecular Liquids. 2017;248:854-70.
[25] Ghasem Bahlakeh, Bahram Ramezanzadeh, Mohammad Reza Saeb, Herman Terryn, Mehdi Ghaffari. Corrosion protection properties and interfacial adhesion mechanism of an epoxy/polyamide coating applied on the steel surface decorated with cerium oxide nanofilm: Complementary experimental, molecular dynamics (MD) and first principle quantum mechanics (QM) simulation methods. Applied Surface Science. 2017;419:650-69.
[26] Ghasem Bahlakeh, Bahram Ramezanzadeh, Mohammad Ramezanzadeh. Corrosion protective and adhesion properties of a melamine-cured polyester coating applied on steel substrate treated by a nanostructure cerium–lanthanum film. Journal of the Taiwan Institute of Chemical Engineers. 2017;81:419-34.
[27] Ghasem Bahlakeh, Bahram Ramezanzadeh, Mohammad Ramezanzadeh. Cerium oxide nanoparticles influences on the binding and corrosion protection characteristics of a melamine-cured polyester resin on mild steel: An experimental, density functional theory and molecular dynamics simulation study. Corrosion Science. 2017;118:69-83.
[28] Ghasem Bahlakeh, Bahram Ramezanzadeh. A Detailed Molecular Dynamics Simulation and Experimental Investigation on the Interfacial Bonding Mechanism of an Epoxy Adhesive on Carbon Steel Sheets Decorated with a Novel Cerium–Lanthanum Nanofilm. ACS applied materials & interfaces. 2017;9:17536-51.
[29] Ghasem Bahlakeh, Mohammad Mahdi Hasani-Sadrabadi, Karl I. Jacob. Morphological and transport characteristics of swollen chitosan-based proton exchange membranes studied by molecular modeling. Biopolymers. 2017;107:5-19.
[30] Ghasem Bahlakeh, Mohammad Mahdi Hasani-Sadrabadi, Shahriar Hojjati Emami, Seyed Nasireddin Saeedi Eslami, Erfan Dashtimoghadam, Mohammad Ali Shokrgozar, Karl I Jacob. Experimental investigation and molecular dynamics simulation of acid-doped polybenzimidazole as a new membrane for air-breathing microbial fuel cells. Journal of Membrane Science. 2017;535:221-9.

[31] A Hosseini, Sh Soleimani, H Pezeshgi Modarres, Sh Hojjati Emami, M Tondar, G Bahlakeh, MM Hasani-Sadrabadi. Exosome-inspired targeting of cancer cells with enhanced affinity. Journal of Materials Chemistry B. 2016;4:768-78.
[32] Mohammad Mahdi Hasani-Sadrabadi, Shahrouz Taranejoo, Erfan Dashtimoghadam, Ghasem Bahlakeh, Fatemeh Sadat Majedi, Jules John VanDersarl, Mohsen Janmaleki, Fatemeh Sharifi, Arnaud Bertsch, Kerry Hourigan, Lobat Tayebi, Philippe Renaud, Karl I. Jacob. Microfluidic Manipulation of Core/Shell Nanoparticles for Oral Delivery of Chemotherapeutics: A New Treatment Approach for Colorectal Cancer. Advanced Materials. 2016;28:4134-41.
[33] Erfan Dashtimoghadam, Ghasem Bahlakeh, Hamed Salimi-Kenari, Mohammad Mahdi Hasani-Sadrabadi, Hamid Mirzadeh, Bo Nyström. Rheological Study and Molecular Dynamics Simulation of Biopolymer Blend Thermogels of Tunable Strength. Biomacromolecules. 2016;17:3474-84.
[34] Ghasem Bahlakeh, Mohammad Mahdi Hasani-Sadrabadi, Karl I. Jacob. Exploring the hydrated microstructure and molecular mobility in blend polyelectrolyte membranes by quantum mechanics and molecular dynamics simulations. RSC Advances. 2016;6:35517-26.
[35] Ghasem Bahlakeh, Mehdi Ghaffari, Mohammad Reza Saeb, Bahram Ramezanzadeh, Frank De Proft, Herman Terryn. A Close-up of the Effect of Iron Oxide Type on the Interfacial Interaction between Epoxy and Carbon Steel: Combined Molecular Dynamics Simulations and Quantum Mechanics. The Journal of Physical Chemistry C. 2016;120:11014-26.
[36] Sourav Kr Saha, Priyabrata Banerjee. A theoretical approach to understand the inhibition mechanism of steel corrosion with two aminobenzonitrile inhibitors. RSC Advances. 2015;5:71120-30.
[37] Mohammad Mahdi Hasani-Sadrabadi, Sana Pour Hajrezaei, Shahriar Hojjati Emami, Ghasem Bahlakeh, Leila Daneshmandi, Erfan Dashtimoghadam, Ehsan Seyedjafari, Karl I. Jacob, Lobat Tayebi. Enhanced osteogenic differentiation of stem cells via microfluidics synthesized nanoparticles. Nanomedicine: Nanotechnology, Biology and Medicine. 2015;11:1809-19.
[38] Mohammad Mahdi Hasani-Sadrabadi, Erfan Dashtimoghadam, Ghasem Bahlakeh, Fatemeh S. Majedi, Hamid Keshvari, Jules J. Van Dersarl, Arnaud Bertsch, Arash Panahifar, Philippe Renaud, Lobat Tayebi, Morteza Mahmoudi, Karl I. Jacob. On-chip synthesis of fine-tuned bone-seeking hybrid nanoparticles. Nanomedicine. 2015;10:3431-49.
[39] Mahdi Tohidian, Seyed Reza Ghaffarian, Seyed Emadodin Shakeri, Ghasem Bahlakeh. Sulfonated Aromatic Polymers and Organically Modified Montmorillonite Nanocomposite Membranes for Fuel Cells Applications. Journal of Macromolecular Science, Part B. 2013;52:1578-90.
[40] Seyed Emadodin Shakeri, Seyed Reza Ghaffarian, Mahdi Tohidian, Ghasem Bahlakeh, Shahrouz Taranejoo. Polyelectrolyte nanocomposite membranes, based on Chitosan-phosphotungstic acid complex and Montmorillonite for fuel cells applications. Journal of Macromolecular Science, Part B. 2013;52:1226-41.
[41] Mohammad Mahdi Hasani-Sadrabadi, Jules J. VanDersarl, Erfan Dashtimoghadam, Ghasem Bahlakeh, Fatemeh Sadat Majedi, Nassir Mokarram, Arnaud Bertsch, Karl I. Jacob, Philippe Renaud. A microfluidic approach to synthesizing high-performance microfibers with tunable anhydrous proton conductivity. Lab on a Chip. 2013;13:4549-53.
[42] Ghasem Bahlakeh, Manouchehr Nikazar, Mohammad Mahdi Hasani-Sadrabadi. Understanding structure and transport characteristics in hydrated sulfonated poly(ether ether ketone)–sulfonated poly(ether sulfone) blend membranes using molecular dynamics simulations. Journal of Membrane Science. 2013;429:384-95.
[43] Ghasem Bahlakeh, Manouchehr Nikazar, Mohammad-Javad Hafezi, Mohammad Mahdi Hasani-Sadrabadi. Investigation of the effects of methanol presence on characteristics of sulfonated aromatic electrolyte membranes: Molecular dynamics simulations. Journal of Power Sources. 2013;243:935-45.
[44] Ghasem Bahlakeh, Manouchehr Nikazar, Mohammad-Javad Hafezi, Erfan Dashtimoghadam, Mohammad Mahdi Hasani-Sadrabadi. Molecular dynamics simulation study of proton diffusion in

polymer electrolyte membranes based on sulfonated poly (ether ether ketone). International Journal of Hydrogen Energy. 2012;37:10256-64.
[45] Ghasem Bahlakeh, Manouchehr Nikazar. Molecular dynamics simulation analysis of hydration effects on microstructure and transport dynamics in sulfonated poly(2,6-dimethyl-1,4-phenylene oxide) fuel cell membranes. International Journal of Hydrogen Energy. 2012;37:12714-24.
[46] Amir Hossein Haghighi, Mohammad Mahdi Hasani-Sadrabadi, Erfan Dashtimoghadam, Ghasem Bahlakeh, Seyyed Emadodin Shakeri, Fatemeh S. Majedi, Shahriar Hojjati Emami, Homayoun Moaddel. Direct methanol fuel cell performance of sulfonated poly (2,6-dimethyl-1,4-phenylene oxide)-polybenzimidazole blend proton exchange membranes. International Journal of Hydrogen Energy. 2011;36:3688-96.

Conference Papers

1- **Ghasem Bahlakeh** "Effects of molecular structure of bio-membrane on efficiency of fuel cell" 9th Iranian Fuel Cell Seminar, February 8, 2017, Shahid Rajaee Teacher Training University, Tehran-Iran
2- **Mohammad Salehi-kojidi, Leila Mirzaei, Ghasem Bahlakeh** "Study of organic coating/metal behavior at microscopic level" 12th Annual Electrochemistry Seminar of Iran, Tarbiat Modares University 19- 20 Oct, 2016, Tehran-Iran
3- **Ghasem Bahlakeh** "Computational evaluation of hydrogen bonding interactions in water-methanol solvated SPPO membranes" 4nd International Conference on Emerging Trends in Energy Conservation, March 2015
4- **Ghasem Bahlakeh** "Computational evaluation of hydrogen bonding interactions in water-methanol solvated SPPO membranes" 4nd International Conference on Emerging Trends in Energy Conservation, March 2015
5- **Ghasem Bahlakeh**, Manouchehr Nikazar, Ashor Mohamad Paya "Characterization of morphological and transport behavior of solvated sulfonated poly(2,6-dimethyl-1,4-phenylene oxide) fuel cell membranes from molecular simulation" 2nd International Conference on Emerging Trends in Energy Conservation, March 2013
6- **Ghasem Bahlakeh**, Manouchehr Nikazar, Ahmad Lashgar, Hajar Falahati, Seyed Emadodin Shakeri, Mahdi Tohidian "Modeling local structure and dynamics of aromatic sulfonated poly(2,6-dimethyl-1,4-phenylene oxide) fuel cell membranes" 6th Iranian Fuel Cell Seminar, March 12 & 13, 2013, Shahid Rajaee Teacher Training University, Tehran-Iran