Mona Amiri
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Jul 10th, 2019

Re: Product and Materials Failure Engineer

Dear Human Resources Advisor,

I am very excited to enclose my application for the position of Product and Materials Failure Engineer at 30 Forensic Engineering. I strongly believe that my education, research, and work experience match the requirements of this position.

Through my PhD and post-doctorate research in the past five and half years, I have successfully designed and executed several academic and industrial projects. I have developed and characterized novel micro and nanomaterials for electrochemical sensing and catalysis applications such as oxygen and CO_2 reduction reactions. Every project entailed several unforeseen obstacles that needed to be dealt with. Coming up with ideas to solve them in timely manner has been only achievable by implementing proper problem solving techniques like fishbone method.

As part of my studies (metallurgical engineering and metallic corrosion) and internship (at Razi metallurgical research center), I had the opportunity to learn and practice numerous mechanical and physical testing of materials. I know how to operate machinery and analyze the data related to corrosion, fatigue, hardness, and stress tests. Working in a chemistry lab environment, I have gained intimate knowledge of personal and lab safety protocols (WHMIS and MSDS), and how to safely handle hazardous chemicals and waste.

My job as a mechanical parts expert/purchasing officer in a supply chain company for more than two and half years provided me with proper skills on time management and working under pressure often on tight schedule. As part of my job, I was point of contact for several operation managers at various part manufacturers dealing with parts' quality control and delivery timeline issues on daily basis. Fulfilling my duties was achieved mostly by effective internal and external communications within the company as well as customer or part manufacturers' personnel. On a few occasions, I had to study and analyze the defective parts (e.g. broken shaft), which were returned during warranty period, in order to find the cause of failure (brittleness of the part due to inadequate heat treatment). This was followed by helping the manufacturer take corrective/preventive measures within the production line.

I have developed great knowledge and proficiency, in finding technical and scientific literature/databases (e.g. ASTM), and in operating various digital tools such as Origin and Office software (Word, PowerPoint) to communicate my findings. These have enabled me to present my research results to different audiences, i.e. industrial and academic, written or oral by publishing numerous scientific articles in renowned peer-reviewed international journals and oral/poster presentations at well-known scientific conferences, or giving reports to industrial partner. As a volunteer, I got the chance to practice communicating my research about hydrogen fuel cells to general public (kids and adults) at Telus World of Science. A simple demo kit was an effective ice breaker for the visitors, and I received a great deal of feedback from the audience.

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I have been a member of a team in most of the projects I have carried out. In my most recent project, I have the role of an electrochemist working with other collaborators in solid state semiconductors, machine learning, and organic chemistry fields. Through all of these partnerships, I have gained valuable experience in productive communication and handling disagreement while working as a team member. I believe that my time-management capability, adaptability, passion and commitment for my personal growth and building up new skills make me a suitable candidate for Product and Materials Failure Engineer at 30 Forensic Engineering.

As per my BSc studies, I obtained EIT status in Metallurgical Engineering with PEO and was eligible to take Professional Practice Exam. More information can be found in my resume in the following pages. I would welcome the opportunity to meet with you and discuss your specific requirements.

Thank you very much for your time and consideration.

Sincerely,

Mona Amiri

PhD, Chemistry & Materials Science

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Canadian Status: Permanent Resident

Work Experience:

Nov 2017 – present: Postdoctoral Fellow, University of Alberta, Edmonton, AB, Canada.

Sept 2017 – Oct 2017: Researcher, Lakehead University, Thunder Bay, ON, Canada.

Dec 2010 – Aug 2013: Mechanical Parts Expert, Purchasing Officer, Sazeh Gostar Saipa Co., Tehran, Iran (The supply chain management of Saipa, automobile manufacturer: www.sazehgostar.com).

Jun 2005 – Aug 2005: Research Intern, Razi Metallurgical Research Center, Tehran, Iran (www.razi-center.net).

Education:

Sept 2013 – Sept 2017: PhD in Chemistry & Materials Science, Department of Chemistry, Lakehead University, Thunder Bay, ON, Canada.

Sept 2007 – Mar 2010: MSc in Metallic Corrosion & Protection, Department of Material Science & Metallurgy Engineering, University of Tehran, Tehran, Iran.

Sept 2002 – Sept 2007: BSc in Industrial Metallurgy Engineering, Department of Mining & Material Science, Amirkabir University of Technology, Tehran, Iran.

Teaching and Research Experience:

Sept 2013 – Mar 2017: Teaching Assistant for Inorganic & Organic Chemistry labs

Sept 2016 – Dec 2016: Lab Instructor of Organic Chemistry I

Jun 2008 – Mar 2010: Characterization of Materials (SEM & XRD)

Awards & Scholarships:

2016-2017: Ontario Graduate Scholarship for International Students (1 out of 2 available spots)

2013-2017: Lakehead University Faculty Research Scholarship

2013-2016: President's International Grad Scholar Award

Professional Services:

May 2016 – Apr 2017: President of Lakehead University Graduate Students' Association (LU-GSA) & Member of Lakehead University Student Union (LUSU) Board of Directors

May 2015 – Apr 2016: Treasurer of Lakehead University Graduate Students' Association (LU-GSA)

2015 – 2017: Member of Trustee & Budget Committees of CUPE Local 3905

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Sept 2016 – Apr 2017: Student Representative on Lakehead University Senate Committee

Dec 2015: Member of Search Committee for New Dean of Faculty of Graduate Studies

Dec 2013 – Sept 2017: In charge of Chemistry Lab chemicals order, labeling, inventory and waste pick-up using DataTel software and department website

2016: Invited reviewer for Journal of Electrochimica Acta

2015: Invited reviewer for Canadian Journal of Chemistry

Peer Reviewed Publications:

1. C. Wang, M. Amiri, R.T. Endean, O. Martinez Perez, S. Varley, B.E. Rennie, L. Rasu, S.H. Bergens, "Modular Construction of Photoanodes with Covalently Bonded Ru- and Ir-Polypyridyl Visible Light Chromophores", *ACS Applied Materials & Interfaces*, **2018**, 10, 24533–24542.
2. M. Amiri, C. Boissy, C. Gottardo, A. Chen, "Effect of Room Temperature Ionic Liquids on the Electrochemical Dissolution and Deposition of Nickel in Watts Solution", *Journal of Applied Electrochemistry*, **2018,** 48, 901-910.
3. M. Amiri, S.K. Konda, W. Keeler, A. Chen, "Superb Pseudocapacitance Based on Three-dimensional Porous Nickel Oxide Modified with Iridium Oxide", *Journal of Physical Chemistry C*, **2017,** 121, 27274-27284.
4. M. Amiri, S.K. Konda, A. Chen, "Facile Synthesis of a Novel Carbon Nitride/Reduced Graphene Oxide/Nickel Hydroxide Nanocomposite for Oxygen Reduction in Alkaline Media", *ChemElectroChem*, **2017**, 4, 997-1001.
5. S. K. Konda, M. Amiri, A. Chen, "Significant Enhancement of Electrosorption of Hydrogen into Palladium via a Facile Annealing Process", *International Journal of Hydrogen Energy*, **2017**, 42, 12375-12383.
6. S.K. Konda, M. Amiri, A. Chen, "Photoassisted Deposition of Palladium Nanoparticles on Carbon Nitride for Efficient Oxygen Reduction", *Journal of Physical Chemistry C*, **2016**, 120, 14467-14473.
7. M. Govindhan, M. Amiri, A. Chen, "Au Nanoparticle/Graphene Nanocomposite as a Platform for the Sensitive Detection of NADH in Human Urine", *Biosensors and Bioelectronics*, **2015**, 66, 474-480.
8. A. Hemmasian-Ettefagh, M. Amiri, C. Dehghanian, "Corrosion Inhibition of Carbon Steel in Cooling Water", *Materials Performance*, **2010**, 49, 60-65.
9. M.H. Rahimi, S.H. Tabaian, S.P. Hoveyda Marashi, M. Amiri, M.M. Dalaly, "The Effect of Aluminum Electropolishing on Nano-pores Arrangement in Anodic Alumina Membranes", *International Journal of Modern Physics B*, **2008**, 22, 3267-3277.
10. M. Amiri, A. Chen, "Cobalt Hydroxide Nanoparticles Modified Sodium Hexa-Titanate Nanowires as an Efficient Electrocatalyst for Hydrogen Evolution in Alkaline Media", to be submitted.
11. M. Amiri, M. Govindhan, A. Chen, "Long-Term Electrochemical Dissolution of Industrial Electrolytic Nickel and Residue Formation", to be submitted.

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Conference Presentations/Posters:

1. M. Amiri, C. Wang, O. Martinez Perez, R. Endean, P. Nepal, S. Xu, J. Liu, S.H. Bergens, "Modular Construction of Ru- bipyridine-type Chromophores via Covalent Bonding", *102nd Canadian Chemistry Conference and Exhibition*, Quebec, Canada, **2019**.
2. M. Amiri, O. Martinez Perez, R. Endean, P. Nepal, C. Wang, S. Xu, J. Liu, S.H. Bergens, "Molecular Construction of Covalent Bonded Ruthenium (II) Bipyridine Based Chromophores", *2019 Future Energy Systems Student & Post-Doctoral Fellow Colloquium*, Edmonton, Canada, **2019**.
3. O. Martinez Perez, M. Amiri, S.H. Bergens, "Immobilized Rhenium- and Manganese-Phenanthroline Catalysts for CO_2 Electroreduction", *2019 Future Energy Systems Student & Post-Doctoral Fellow Colloquium*, Edmonton, Canada, **2019**.
4. A. Chen, M.N. Hossain, M. Amiri, B. Sidhureddy, S. Thind, "Nanomaterials Based Electrochemical Capacitors for Energy Storage", *International Conference on Energy, Materials and Photonics*, Montreal, Canada, **2018**.
5. M. Amiri, C. Wang, O. Martinez Perez, S.H. Bergens, "Modular Construction of Ru- and Ir-Chromophore Photoanodes by Covalent Bonding and Self-assembly", *Canadian Section of the ECS Spring Meeting*, Edmonton, Canada, **2018**.
6. M. Amiri, S.K. Konda, A. Chen, "Electrochemical Studies of Nickel and Cobalt Based Nanocomposites for Energy Applications", *100th Canadian Chemistry Conference and Exhibition*, Toronto, Canada, **2017**.
7. M. Amiri, S.K. Konda, A. Chen, "Synthesis of Porous Nickel Oxide with Enhanced Electrochemical Specific Capacitance", *100th Canadian Chemistry Conference and Exhibition*, Toronto, Canada, **2017**.
8. M. Amiri, M. Govindhan, A. Chen, "Effects of Temperature on Electrochemical Dissolution of Nickel in Ionic Liquids", *International Society for Electrochemistry*, Niagara Falls, Canada, **2014**.
9. A. Mirhashemi, S.A. Azimifar, S.M. Musavi Khoei, P. Marashi**,** M. Amiri, "Nano Crystal Layer Formation Using Surface Severe Plastic Deformation (SSPD)", *9th Surface Engineering and Heat Treatment National Symposium*, Tehran, Iran, **2008**.
10. M. Amiri, M.H. Rahimi, S.H. Tabaian, P. Marashi**,** A**.** Zolfaghari**,** "Optimizing Aluminum Electropolishing and its Influence on the Structural Arrangement of Ordered Nanoporous Anodic Alumina Membranes (AAMs)", *International Nanotech Symposium & Exhibition*, Goyang, South Korea, **2007**.
11. M. Amiri, M.H. Rahimi, S.H. Tabaian, P. Marashi**,** A**.** Zolfaghari**,** "The Effect of Aluminum Electropolishing on Nano-pores Arrangement in AAMs", *1st International Conference on Ultrafine Grained & Nanostructured Materials*, Tehran, Iran, **2007**.
12. K. Dehghani, A. Abdollahinia, M.K Dehdashti, H. Aboutalebi, M. Amiri, M. Mohammadzadeh, "The Effect of Temperature and Strain Rate of Hot Compression Test on Nano-precipitation in Interstitial Free Steels", *European & International Forum on Nanotechnology*, Dusseldorf, Germany, **2007**.
13. M. Kazemzadeh, S.H. Aboutalebi, M. Amiri, R.B. Lakeh, S.K.S. Mazinani, "Nano-precipitation in IF Steel by Use of Hot Compression Test", *1st International Conference on Industrial Process for Nano & Micro Products*, London, UK, **2007**.

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14. K. Dehghani, M. Mohammadzadeh, M. Kazemzadeh, M. Amiri, M. Salehi, "Dynamic Nano-precipitation in IF Steel by Thermomechanical Treatment", *Steel Symposium 85*, Tehran, Iran, **2006**.

Industrial Technical Reports:

1. M. Amiri, C. Ostrom, M. Govindhan, A. Chen, "Comparative Study of Electrolytic Nickel Samples Produced from Different Plants". *Report to Vale Canada Ltd*. 21 pages, Dec 18, **2014**.
2. C. Ostrom, M. Amiri, M. Govindhan, A. Chen, "Characterization and electrochemical dissolution of Ni samples: VBN03/24, VBN06/20 and VBN06/23". *Report to Vale Canada Ltd*. 41 pages, Dec 18, **2014**.
3. M. Govindhan, M. Amiri, A. Chen, "Understanding the anodic dissolution of electrolytic nickel". *Report to Vale Canada Ltd*. 37 pages, Mar 25, **2014**.
4. M. Govindhan, M. Amiri, G. Wu, A. Chen, "Investigation of the Electrochemical Dissolution of Electrolytic Nickel Samples". *Report to Vale Canada Ltd*. 49 Slides, Oct 31, **2013**.

Science Outreach:

- M. Amiri, Demonstration kit on water splitting as a method for production of hydrogen fuel, Energy week, Telus World of Science, Edmonton, AB, Canada, May 11, **2019**.
- M. Amiri, O. Martinez Perez, S.H. Bergens, Edmonton Home-schooled Students, Energy week Enrichment Program, University of Alberta, Edmonton, AB, Canada, May 8, **2019**.
- M. Amiri, O. Martinez Perez, S.H. Bergens, Basics of solar fuels and photosynthesis, Skype a Scientist Program, 6th grade Students (John Knox Christian School), Oakville, ON, Canada, Oct 31, **2018**.
- M. Amiri, S.H. Bergens, Basics of solar fuels and photosynthesis, Skype a Scientist Program, 3rd grade Students (Rosemary Heights School), Surrey, BC, Canada, Oct 10, **2018**.
- M. Amiri, S.H. Bergens, Basics of solar fuels and photosynthesis, Skype a Scientist Program, 4th grade Students, Kansas, USA, Oct 4, **2018**.
- M. Amiri, L. Truong, J. Pal, S.H. Bergens, Edmonton High School Students, TeamUp Science Summer Camp (Enrichment Program), University of Alberta, Edmonton, AB, Canada, Jul 27, **2018**.
- M. Amiri, C. Wang, O. Martinez Perez, S.H. Bergens, United Nations Intergovernmental Panel on Climate Change Delegates, Tour on Solar Fuels, University of Alberta, Edmonton, AB, Canada, Mar 8, **2018**.
- M. Amiri, C. Wang, O. Martinez Perez, S.H. Bergens, Staff of Internal UAlberta Sustainability, Tour on Solar Fuels, University of Alberta, Edmonton, AB, Canada, Mar 8, **2018**.
- M. Amiri, C. Wang, S.H. Bergens, Staff of City of Edmonton, Tour on Solar Fuels, University of Alberta, Edmonton, AB, Canada, Dec 5, **2017**.

Certificates:

- Mistake Proofing (POKA YOKE), IMQ Academy, 2012
- Measurement System Analysis (MSA) Training Course, IMQ Academy, 2011
- Benchmarking Training Course, IMQ Academy, 2011
- Team Working Training Course, IMQ Academy, 2011
- ISO/TS 16949:2009 Essentials & Documentation Training Course, IMQ Academy, 2011
- Problem Solving Techniques Training Course, IMQ Academy, 2011

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- 7 Quality Tools (SPC) Training Course, IMQ Academy, 2011
- NDT (Non Destructive Testing) Inspection Methods Course, Quality Service, 2006
- ISO 9001:2000 Internal Auditor Course, Quality Service, 2005

Community Volunteering Activities:
Sept 2018: Habitat for Humanity, Edmonton, AB.

Nov 2017: Miss MoneyPenny Fundraiser, Harcourt House Gallery, Edmonton, AB.

Apr 2017: Judge at Northwestern Ontario Regional Science Fair, Thunder Bay, ON.

Feb 2016 – Apr 2016: FoodBank, Lakehead University, Thunder Bay, ON.

Aug 2015: Hammer Down 4 Habitat Motorcycle Ride, Thunder Bay, ON.

Aug 2015: Dirty Girls Mud Run, Canadian Cancer Society, Thunder Bay, ON.

Jul 2015: Dragon Boat Race Festival (Canadian Mental Health Association, Catholic Family Development Centre and St. Joseph's Foundation), Thunder Bay, ON.

References:

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More references can be provided upon request.