

Alireza Narimannezhad

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| CONTACT INFORMATION | (509) 592-8311 a.narimannezhad@wsu.edu | Center for Materials Research, PO Box 642711, Washington State University Pullman, WA, 99164-2711 USA |
| OBJECTIVE | Materials engineer seeks a role that utilizes his experimental skills, modeling expertise, and industry experience, which enables him to make a positive contribution to the organization. | |
| RESEARCH INTERESTS | MEMS Microfabrication, Modeling and Simulation, Non-neutral Plasma Trapping, Materials Characterization, Welding and Bonding. | |
| EDUCATION | PH.D. MATERIALS SCIENCE (MICROFABRICATION AND MODELING) | May 2015 |
| | WASHINGTON STATE UNIVERSITY, PULLMAN, WA | |
| | <ul style="list-style-type: none">• Research Assistant, Thesis: <i>Simulation Studies & Fabrication of MicroTraps With Long Aspect Ratio to Store High Density of Positrons.</i>• Advisor: Kelvin G. Lynn, Ph.D | |
| | M.SC., MATERIALS SCIENCE AND ENGINEERING (WELDING AND BONDING) | Jan 2008 |
| | SHARIF UNIVERSITY OF TECHNOLOGY, TEHRAN, IRAN | |
| | <ul style="list-style-type: none">• Research Assistant, Thesis: <i>Joining of Zinc Pressure Die Cast Alloys in Semisolid State.</i> | |
| | B.SC., MATERIALS ENGINEERING (METALLURGY) | Aug 2005 |
| | SHARIF UNIVERSITY OF TECHNOLOGY, TEHRAN, IRAN | |
| | <ul style="list-style-type: none">• Research Assistant, Thesis Topic: <i>Optimization of Zinc Extraction Process from Discarded Ores.</i> | |
| WORK EXPERIENCE | Postdoctoral Research Associate | May 2015 – now |
| | CENTER FOR MATERIALS RESEARCH, WASHINGTON STATE UNIVERSITY | |
| | <ul style="list-style-type: none">• Working on the large aspect ratio micro-Malmberg-Penning traps both in the microfabrication as well as testing the behavior of electrons and positrons.• Evaluating the influence on lifetime, space charge, and patch-effects due to variations in the surface properties of realistic traps, as well as, variations of the reflecting potentials at each end of the trap.• Addressing the alignment and variations in the applied magnetic field and developing strategies to improve the trapping and to assist in the optimal design. | |
| | Adjunct Faculty | July 2015 – now |
| | SCHOOL OF MECHANICAL AND MATERIALS, WASHINGTON STATE UNIVERSITY | |
| | <ul style="list-style-type: none">• Serving as an Instructor. | |
| | Project Manager | 2009 – 2010 |
| | DISAL CO., IRAN. | |
| | <ul style="list-style-type: none">• Managed over \$70M projects of manufacturing petrochemical and petroleum equipment.• Supervised a team of eight utilizing standardized designs (API, ASME, ANSI and ISO).• Served as the face of the organization, participating in company panels, providing interviews, etc. | |
| | Plant Design Engineer | 2006 – 2009 |
| | KAHANROBA CONSULTING ENGINEERS COMPANY, IRAN. | |

- Recruited to re-establish a welding department for quality assurance.
- Helped the company to get certified to ISO 9001:2008, ISO 14001:2004, & OHSAS 18001:2007.
- Experience on design and assembly of pumps and components for (ultra) high vacuum systems.
- Piping and equipment layout, support, and stress analysis.
- Involved in rotary and stationary equipment design such as heat exchangers, tanks, etc..

Consulter of Direct Manager

2005 – 2009

FARAVARI MAVAD MADANI IRAN CO., IRAN.

- Providing consultancy on the Design, construction, and development of 2nd phase Zinc plant.
- Worked as a consultant (visits on a weekly basis to the plant) discussing new challenges and solutions to the demanding design.
- We succeeded to double the annual production in three years by expanding the production line.

Intern

Summer 2005

R&D of IZMDC Co., Iran,

- Working on B.Sc. thesis; Extraction metallurgy research on discarded ores.

REFEREED JOURNAL PUBLICATIONS

1. **A. Narimannezhad** et al., “SIMULATION STUDIES OF THE BEHAVIOR OF POSITRONS IN A MICROTRAP WITH LONG ASPECT RATIO”. *Eur. Phys. J. D*, 68:351, 2014.
2. **A. Narimannezhad** et al., MICROFABRICATION OF A HIGH-DENSITY, NON-NEUTRAL ANTIMATTER TRAP. *Micro & Nano Letters*, 9:630, 2014.
3. **A. Narimannezhad** et al., “MICROSTRUCTURAL EVOLUTION AND MECHANICAL PROPERTIES OF SEMISOLID STIR WELDED AG40A DIECAST ALLOY”. *J. Mat. Proc. Tech.*, 209:4112, 2009.
4. A. Khosravani, H. Aashuri, P. Davami, **A. Narimannezhad**, “LIQUID SEGREGATION BEHAVIOR OF SEMISOLID AZ91 ALLOY DURING BACK EXTRUSION TEST”. *J. Alloys Compd.*, 477:822, 2009.
5. **A. Narimannezhad** et al., “SEMISOLID JOINING OF ZINC AG40A ALLOY BY PARTIAL REMELTING AND MECHANICAL STIRRING”. *Solid State Phenomena* 141–143:225, 2008.
6. A. Foroughi, H. Aashuri, **A. Narimannezhad**, A. Khosravani, M.Kiani, “NUMERICAL MODELING OF DIE FILLING BY SEMISOLID A356 ALLOY”. *Solid State Phenomena*, 141–143:605, 2008.
7. M. Kiani, H. Aashuri, S. Nategh, A. Foroughi, **A. Narimannezhad**, A. Khosravani, “MORPHOLOGICAL FEATURES OF SILICON RICH PHASE IN POWDER THIXOFORMED SPRAY ATOMIZED HYPER-EUTECTIC AL-SI ALLOY”. *Solid State Phenomena*, 141–143:493, 2008.
8. A. Khosravani, H. Aashuri, P. Davami, **A. Narimannezhad**, A. foroughi, M. Kiani, “MICROSTRUCURAL EVOLUTION OF AZ91 ALLOY CONTAINING 3% CA PREPARED BY COOLING SLOPE”. *Solid State Phenomena*, 141–143:427, 2008.

CONFERENCE PROCEEDINGS

1. **A. Narimannezhad** et al., “MICROFABRICATION OF HIGH ASPECT RATIO MICROTUBE ARRAYS TO STORE HIGH DENSITY CHARGED PARTICLES”. *The 9th IEEE International Conference on Nano/Micro Engineered and Molecular Systems (NEMS)*, 269–274, 2014.
2. **A. Narimannezhad** et al., “ARRAYS OF MICRO PENNING-MALMBERG TRAPS: AN APPROACH TO FABRICATE VERY HIGH ASPECT RATIOS”. *IEEE 27th International Conference on Micro Electro Mechanical Systems (MEMS)*, 453–456, 2014.

HONORS AND AWARDS

- Best Conference Paper Finalist Award (out of ~300 papers from more than 20 countries) 2014
IEEE, NEMS Meeting, USA.
- Elites Award 2009
National Elites Organization, Iran.
- Graduation With Distinction Award (1st rank), M.Sc. 2008
Sharif University of Technology, Iran.
- Excellence Award: 1st rank among 2500 participants 2005
Nationwide Graduate School Entrance Exam for Materials Science
Ministry of Science, Research, and Technology, Iran.

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| GRANT PROPOSAL CO-PI | <ul style="list-style-type: none"> • “PUSHING THE LIMITS OF BONDED 3D-IC STACK HEIGHTS WHILE MAINTAINING HIGH PRECISION ALIGNMENT” <i>NSF grant PD-13-1517</i> | OCT 2014 |
| PATENTS | <ul style="list-style-type: none"> • “SEMISOLID STIR WELDING PROCESS” <i>Patent 50236, The Iran Patent Office.</i> • “COOLING SLOPE CASTING OF AZ91 ALLOY” <i>Patent 51709, The Iran Patent Office.</i> | 2008 2008 |
| TRAVEL GRANTS | <ul style="list-style-type: none"> • AVS 61st International Symposium and Exhibition, Baltimore, MD. <i>Washington State University GPSA Travel Grant, \$686</i> <i>American Vacuum Society Reregistration Grant, \$305</i> • APS, DPP meeting, New Orleans, LA. <i>American Physical Society Travel Grant, \$800</i> • IEEE, MEMS meeting, San Francisco, CA <i>Transducer Research Foundation Travel Grant, \$300</i> • APS, Division of Plasma Physics meeting, Denver, CO. <i>Washington State University GPSA Travel Grant, \$500</i> • APS, Division of Plasma Physics meeting, Providence, RI. <i>Washington State University GPSA Travel and Registration Grants, \$650</i> | Nov 2014 Oct 2014 Jan 2014 Nov 2013 Oct–Nov 2012 |
| PRESENTATIONS | <ul style="list-style-type: none"> • AVS 61st International Symposium and Exhibition, Baltimore, MD. <i>“Charged Particles Micro-Penning-Malmberg Trap: An Approach to Store High Densities with Substantially Lower End Barrier Potentials”</i> • 56th Annual Meeting of the APS Division of Plasma Physics, New Orleans, LA. <i>“Progress Towards a Microtrap Array for Positron Storage”</i> • 9th IEEE International Conference on NEMS, Waikiki Beach, HI. <i>“Microfabrication of Microtube Arrays to Store High Density Charged Particles”</i> • 56th IAS Annual Meeting and Symposium, Moscow, ID. <i>“Positrons in Microtraps with Long Aspect Ratios: Trap Simulation and Fabrication”</i> • Wiley Research Expositions, Pullman, WA. <i>“Simulation Studies of The Behavior of Positrons In a Microtrap With Long Aspect Ratio”</i> • The 27th IEEE International Conference on MEMS, San Francisco, CA. <i>“Arrays Of Micro PM Traps: an Approach to Fabricate Very High Aspect Ratios”</i> • 55th Annual Meeting of the APS Division of Plasma Physics, Denver, CO. <i>“Particle-in-Cell WARP Simulation Studies of Positron Plasmas in Micro-PM Traps”</i> • 54th Annual Meeting of the APS Division of Plasma Physics, Providence, RI. <i>“Simulation Studies of The Behavior of Positrons In a Microtrap With Long Aspect Ratio”</i> • 64th Annual Gaseous Electronics Conference, Salt Lake City, UT. <i>“A New Approach to Confine The High-Density Nonneutral Plasma”</i> | Nov 2014 Oct 2014 April 2014 March 2014 Feb 2014 Jan 2014 Nov 2013 Oct 2012 Nov 2011 |
| CERTIFICATIONS | <ul style="list-style-type: none"> • Atomic Layer Deposition, American Vacuum Society • ASME Section VIII, Parsian Technical Inst. • PV Elite, Parsian Technical Inst. | 2014 2010 2010 |
| LEADERSHIP AND SERVICES | <ul style="list-style-type: none"> • President of MRS Student Chapter at WSU • Referee/Reviewer (e.g. Applied Mathematical Modeling) | 2013 – 2014 |
| ASSOCIATIONS | <ul style="list-style-type: none"> • MRS, APS, AVS, IEEE, IAS | 2012 – present |
| COMPUTER SKILLS | Programming: <ul style="list-style-type: none"> • C++, Fortran, Python, Pascal, UNIX shell scripting, MATLAB, Mathematica. | |

Software:

- WARP, Origin, CPO, COMSOL, Simulink, LabVIEW, ANSYS, SIMION, Opera FEA, PV Elite, TANK, NozzlePRO, Aspen HTFS, HTRI, ProCAST, AutoCAD, SolidWorks, LaTeX.

Modeling:

- Finite Element Analysis (FEA), Molecular Dynamics (MD), and Particle-In-Cell (PIC) Simulations.

EXPERIMENTAL
SKILLS

- SEM, TEM, EDAX, AFM, KPFM, XPS, AES.
- Photolithography, E-beam Lithography, Spin Coating, Plasma Etching, Deep Reactive Ion Etching, Thermal Bonding, Thermal Oxidization, PVD, CVD, ALD, Epsilon Test, Profilometry.
- Welding and Joining of Materials.
- Multiwafer Aligning and Bonding (3-D Integration, Wafer-level Packaging, Microfluidics).
- Plant Design and Construction, Development and Financing, Procurement, and Project Management.