

Hadi Ghasemi, PhD

Bill D. Cook Assistant Professor
Director of Nanotherm Research Group

Department of Mechanical Engineering
University of Houston
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Summary

Professional Experience : University of Houston (*Assistant Professor*) (Sept. 2014-now)

Education: Massachusetts Institute of Technology (*Postdoc*)- Advisor: *Gang Chen*
Massachusetts Institute of Technology (*Postdoc*)- Advisor: *Alexander Mitsos*
University of Toronto (*PhD*)- Advisor: *Charles Ward*

Background: Nano energy, Surface physics, Thermal fluids,
Heat transfer, Surface thermodynamics and Non-equilibrium thermodynamics

Research Topics: Interfacial energy transport, Evaporation kinetics, Surface Physics,
Physics of wetting, Sustainable energies (Solar energy), Biomimetic engineering,
Water-energy nexus and Physics of adsorption

Selected Honors and Awards: College Research Excellence Award (2018)
NASA iTech Top Three Innovator (2017)
University Teaching Excellence Award (2017)
Larry Witte Fellowship (2016)
Bill D. Cook Professorship (2016)
AFOSR Young Investigator Award (YIP)(2016)
College Teaching Excellence Award, UH (2016)
Departmental Citizenship Award, UH (2015)
Finalist for World Technology Award (2014)
NSERC Postdoctoral Fellowship (2012)
Russel Reynolds Award in Thermodynamics (2010)

Publications in International Journals: 37

Patents: 7

Teaching Experience: Conduction and Radiation (University of Houston)
Interfacial Phenomena (University of Houston)
Thermodynamics I (University of Houston)
Thermo-Fluid Engineering I (MIT)
Thermodynamics (University of Toronto)

Education

- **Postdoctoral Associate**, Massachusetts Institute of Technology **Oct. 2012-July 2014**
Advisor: *Prof. Gang Chen*
 - Conducted a research program on “Aerogel-based solar collectors”.
 - Conducted a research program on “Heat localization concept”.
 - Conducted a research program on “Full-spectrum solar collectors”.
 - Conducted a research program on “High thermal conductive polyethylene thin films”.
- **Postdoctoral Associate**, Massachusetts Institute of Technology **Dec. 2011-Dec. 2012**
Advisor: *Prof. Alexander Mitsos*
 - Conducted a research program on “Hybrid solar-geothermal power generation”.
 - Conducted a research program on “Dual extremum principle in thermodynamics”.
- **Ph. D.** in Mechanical Engineering **2007-2011**
University of Toronto
Dissertation Title: “Sessile water droplets: equilibrium and evaporation”
Advisor: *Prof. Charles A. Ward*
- **M. Sc.** in Materials Science and Engineering **2004-2006**
Sharif University of Technology
- **B. Sc.** in Materials Science and Engineering **1999-2003**
Iran University of Science and Technology

Current and past students

- 1 Postdoctoral fellow advised
 - 9 PhD students advised, 3 PhD graduated
 - 7 MSc students advised 7 MSc graduated
 - 14 Undergraduate students advised including 3 honor thesis
1. Peyman Irajizad, PhD Mechanical Engineering, 2015-2018
Thesis: On nano-scale fundamentals of ice formation and icephobic surfaces
 2. Ali Masoudi, PhD Mechanical Engineering, 2014-2018
Thesis: On kinetics of scale and hydrate formation in oil/gas pipelines
 3. Nazanin Farokhnia, PhD Mechanical Engineering, 2014-2018
Thesis: Micro/nano structures for tuned phase change heat transfer,
 4. Varun Kashyap, PhD Mechanical Engineering, 2016-Present
Thesis: On heat localization of solar energy, QE Passed in 2018

5. Masoumeh Nazari, PhD Mechanical Engineering, 2016-Present
Thesis: Underpinnings of thin-film evaporation at nano-scale, QE Passed in 2018
6. Parahm Jafari, PhD Mechanical Engineering, 2016-Present
Thesis: Fundamentals of an evaporating liquid-vapor interface, QE Passed in 2018
7. Bahareh Eslami, PhD Mechanical Engineering, 2017-Present
Thesis: On durable anti-biofouling surfaces
8. Sina Nazifi, PhD Mechanical Engineering, 2018-Present
Thesis: On nanoscale physics of ice nucleation and growth
9. Zixu Huang, PhD Mechanical Engineering, 2018-Present
Thesis: On durable anti-bacterial surfaces
10. Parham Jafari, MSc Mechanical Engineering, 2016-2018
Thesis: A theory on evaporative mass flux
11. Shadi Shariatnia, MSc Mechanical Engineering, 2015-2016
Thesis: Double Diffusive Effects in Buoyancy Driven Exchange Flow of Miscible Fluids in Inclined Pipes
12. Bahareh Eslami, MSc Mechanical Engineering, 2015-2016
Thesis: Non-isothermal Buoyancy-Driven Exchange Flow of Miscible Fluids in inclined Pipes
13. Seyed Mohammad Sajadi, MSc Mechanical Engineering, 2015-2016
Thesis: Micro/nano structures for tuned heat transfer
14. Nazanin Farokhnia, MSc Mechanical Engineering, 2014-2016
Thesis: On optimal micro/nano structures for thin-film evaporation
15. Peyman Irajizad, MSc Mechanical Engineering, 2015-2016
Thesis: On nanoscale droplets of ferrofluids
16. Sahil Ray , MSc Mechanical Engineering, 2016-2017
Thesis: On magnetic slippery surfaces
17. Matt Gorman, Abdullah Al-Bayati, Adjele Wilson, Habilou Ouro-Koura, Tochi Chukwu, Tilal Elkaram, Corrinne Cassel, Carlin Ashford, Tam Nguyen, James Russ, Fernando Rodriguez, Munib Hasnain, Luiz Felipe Rolim, Michael Tobia (Undergraduate students)

Journal Publications

The students in Nanotherm group are denoted by *.

J39. Peyman Irajizad*, Sina Nazifi* and **Hadi Ghasemi**. “Icephobic Surfaces: Definition and Figures of Merit“, under review, 2019.

J38. Ali Masoudi*, Parham Jafari*, Varun Kashyap*, Masoumeh Nazari* and **Hadi Ghasemi**. “In-situ studies on kinetics of hydrate formation“, under review, 2019.

J37. Peyman Irajizad*, Abdullah Al-Bayati*, Bahareh Eslamiz*, Taha Shafquat, Masoumeh Nazari*,

- Parham Jafari*, Varun Kashyap*, Ali Masoudi*, Daniel Araya and **Hadi Ghasemi**, “Stress-Localized Durable Icephobic Surfaces“, Materials Horizons, DOI: 10.1039/C8MH01291A, 2019.
- J36. Masoumeh Nazari*, Ali Masoudi*, Parham Jafari*, Varun Kashyap*, Peyman Irajizad* and **Hadi Ghasemi**. “Ultra heat flux in nano-confined geometries“, Langmuir, 35, 1, 78-85, 2019.
- J35. Varun Kashyap*, Riddhiman Medhi*, Peyman Irajizad*, Parham Jafari*, Masoumeh Nazari*, Ali Masoudi*, Maria D. Marquez, T. Randall Lee, and **Hadi Ghasemi**, “Capture and conversion of carbon dioxide to water by solar heat localization“, Sustainable Energy and Fuels, 3, 272-279, 2019.
- J34. Parham Jafari*, Ali Masoudi*, Peyman Irajizad*, Masoumeh Nazari*, Varun Kashyap*, Bahareh Eslami* and **Hadi Ghasemi**, “Evaporation mass flux: a predictive model and experiments, Langmuir, 34(39), 11676-11684, 2018.
- J33. Kenneth McEnaney, Lee Weinstein, Daniel Kraemer, **Hadi Ghasemi** and Gang Chen, “Aerogel-based solar thermal receivers“. Nano Energy, 40, 180-186, 2017.
- J32. Seyed Mohammad Sajadi*, Peyman Irajizad*, Varun Kahshyap*, Nazanin Farokhnia* and **Hadi Ghasemi**, “Surfaces for high heat dissipation with no Leidenfrost limit“. Applied Physics Letters, 111, 021605, 2017.
- J31. Varun Kashyap*, Abdullah Al-Batyati*, Seyed Mohammad Sajadi*, Peyman Irajizad* and **Hadi Ghasemi**, “Flexible Anti-Clogging Graphite Film for Scalable Solar Desalination by Heat Localization“. Journal of Materials Chemistry A, 5, 15227-15234, 2017.
- J30. Seyed Mohammad Sajadi*, Jose Ordonez-Miranda, James M. Hill, Younes Ezzahri, Karl Joulain and **Hadi Ghasemi**, “Invariant for One-Dimensional Heat Conduction in Dielectrics and Metals“. Europhysics Letters, 118, 34001, 2017.
- J29. Bahareh Eslami*, Shadi Shariatnia*, **Hadi Ghasemi**, and Kamran Alba, ”Non-isothermal buoyancy-driven exchange flows in inclined pipes”, Physics of Fluids, 29, 062108, 2017.
- J28. Ali Masoudi*, Peyman Irajizad*, Nazanin Farokhnia*, Varun Kashyap* and **Hadi Ghasemi**, “Anti-scaling magnetic slippery surfaces“, ACS Applied Materials and Interfaces, 9, 21025-21033, 2017.
- J27. Peyman Irajizad*, Sahil Ray*, Nazanin Farokhnia*, and **Hadi Ghasemi**, “Remote droplet manipulation on self-healing thermally activated magnetic slippery surfaces“Advanced Materials Interfaces, 4, 1700009, 2017
- J26. Nazanin Farokhnia*, Seyed Mohammad Sajadi*, Peyman Irajizad*, and **Hadi Ghasemi**, “Decoupled hierarchical structures for suppression of Leidenfrost Phenomenon“. Langmuir, 33 (10), 2541-2550, 2017.
- J25. Peyman Irajizad*, Munib Hasnain*, Nazanin Farokhnia*, Seyed Mohammad Sajadi*, and **Hadi**

Ghasemi, “Magnetic slippery extreme icephobic surfaces“. Nature Communications. 7, 13395, 2016. (Highlighted in more than 50 news agency)

J24. Nazanin Farokhnia*, Peyman Irajizad*, Seyed Mohammad Sajadi*, and **Hadi Ghasemi**, “Rational micro-nanostructuring for thin film evaporation“, Journal of Physical Chemistry C, 120 (16), 8742-8750, 2016.

J23. Seyed Mohammad Sajadi*, Nazanin Farokhnia*, Peyman Irajizad*, Munib Hasnain* and **Hadi Ghasemi**, “Flexible artificially networked structure for ambient/high pressure solar steam generation“, Journal of Materials Chemistry A, 4, 4700-4705, 2016.(* Equal Contributor)

J22. Peyman Irajizad*, Nazanin Farokhnia*, and **Hadi Ghasemi**, “Dispensing Nano-Pico Droplets of Ferrofluid“, Applied Physics Letters, 107, 191601, 2015.(Cover article)

J21. George Ni, Nenad Miljkovic, **Hadi Ghasemi**, Xiaopeng Huang, Svetlana V. Boriskina, Cheng-Te Lin, Jian Jian Wang, Yanfei Xu, Md. Mahfuzur Rahman, TieJun Zhang, Gang Chen. “ Volumetric solar heating of nanofluids for direct vapor generation“, Nano Energy, 17, 290-301, 2015.

J20. Mohammad Ayub*, Alexander Mitsos, and **Hadi Ghasemi**, “Thermo-economic analysis of a hybrid solar-binary geothermal power plant“, Energy, 87, 326-335, 2015.

J19. Yuan Yang, Seok Woo Lee, **Hadi Ghasemi**, James Loomis, Xiaobo Li, Daniel Kraemer, Guangyuan Zheng, Yi Cui, and Gang Chen, “ A Charging-free Electrochemical System for Harvesting Low-grade Thermal Energy”, PNAS, 111 (48), 17011-17016, 2014.

J18. Yuan Yang, James Loomis, **Hadi Ghasemi**, Seok Woo Lee, Yi Jenny Wang, Yi Cui, and Gang Chen, “Membrane-Free Battery for Harvesting Low-Grade Thermal Energy”, Nano Letters, 14 (11), 6578-6583, 2014.

J17. Jame Loomis *, **Hadi Ghasemi***, Xiaopeng Huang, Jianjian Wang, Nagarajan Thoppey, Jonathan Tong, Yanfei Xu, Xiaobo Li, Cheng-Te Lin and Gang Chen, “Continuous fabrication platform for highly aligned polymer films“, Technology, 2(3), 2014. * equal contributor.

J16. **Hadi Ghasemi**, George Ni, Amy Marie Marconnet, James Loomis, Selcuk Yerci, Nenad Miljkovic, and Gang Chen, “Solar steam generation by heat localization“, Nature Communications, 5:4449, 2014.

J15. **Hadi Ghasemi**, Elysia Sheu, Alessio Tizzanini, Marco Paci and Alexander Mitsos, “ Hybrid solargeothermal power generation: Optimal retrofitting“, Applied Energy, 131, pp. 158-170, 2014.

J14. Seok Woo Lee, Yuan Yang, Hyun-Wook Lee, **Hadi Ghasemi**, Daniel Kraemer, Gang Chen and Yi Cui, “ An electrochemical system for highly efficient harvesting of low-grade heat energy“, Nature Communications, 5:3942, 2014.

J13. S. V. Briskina, **Hadi Ghasemi**, G. Chen, “Plasmonic materials for advanced energy applica-

tions“, Materials today, 16(10), 375-386, 2013.

J12. **Hadi Ghasemi**, Marco Paci, Alessio Tizzanini, and Alexander Mitsos, “Modeling and optimization of a binary geothermal power plant”, Energy, 50 (1), pp. 412-428, 2013.

J11. **H. Ghasemi** and C. A. Ward. “Mechanism of sessile water droplet evaporation: Kapitza resistance at the solid-liquid interface”. Journal of Physical Chemistry C. 115, pp. 21311-21319, 2011.

J10. **H. Ghasemi** and C. A. Ward, “Comment on “ Discussion on a mechanical equilibrium condition of a sessile drop on a smooth solid surface””, Journal of Chem. Phys., 134, 247101, 2011.

J9. **H. Ghasemi** and C. A. Ward, “Energy transport by thermocapillary convection during sessile-water droplet evaporation“, Physical Review Letters, 105, 136102, 2010.

J8. **H. Ghasemi** and C. A. Ward, “Sessile-water-droplet contact angle dependence on adsorption at the solid-liquid interface“, Journal of Physical Chemistry C, 114, pp. 5088-5100, 2010.

J7. **H. Ghasemi** and C. A. Ward, “Surface tension of solids in the absence of adsorption“, Journal of Physical Chemistry B, 113, pp. 12632-12634 , 2009.

J6. N. Barati, M. A. Faghihi Sani, Z. Sadeghian, **H. Ghasemi**, “Titania nanostructured coating for corrosion mitigation of stainless steel“, Protection of Metals and Physical Chemistry of Surfaces, 50 (3), pp. 371-377, 2014.

J5. N. Barati, M. A. Faghihi Sani, **H. Ghasemi**, “Photocathodic protection of 316L stainless steel by coating of Anatase nanoparticles“, Protection of Metals and Physical Chemistry of Surfaces, 49 (1), pp. 109-112, 2013.

J4. N. Barati, M. A. Faghihi Sani, **H. Ghasemi**, Z. Sadeghian, and S. M. M. Mirhoseini, “ Preparation of uniform TiO₂ nanostructure film on 316L S.S by sol- gel dip coating“, Journal of Applied Surface Science, 225, pp. 8328-8333, 2009.

J3. **H. Ghasemi**, A. H. Kokabi, M. A. Faghihi Sani, and Z. Riazi, “ Roles of preoxidation, Cu₂O particles, and interface pores on the strength of eutectically bonded Cu/ α - Al₂O₃“, Materials and Design, 30 (4), pp. 1098-1102, 2009.

J2. **H. Ghasemi**, A. H. Kokabi, M. A. Faghihi Sani, and Z. Riazi, ” Alumina-Copper eutectic bond strength: contribution of preoxidation, cuprous oxides particles, and pores”, Materials Forum, 32, pp. 90-97, 2008.

J1. **H. Ghasemi**, M. A. Faghihi Sani, and Z. Riazi, “An influence of phase development on mechanical strength of alumina-copper joint prepared by Moly-Mn method“, Iranian Journal of Materials Science and Engineering, 4, pp. 14-21, 2007.

Patents

- P1. **Hadi Ghasemi**, Amy Marie Marconnet, and Gang Chen, “Localized solar collectors“, US Patent 9459024
- P2. Seok Woo Lee, Yuan Yang, **Hadi Ghasemi**, Yi Cui, and Gang Chen, “An electrochemical system for highly efficient harvesting of low-grade heat energy“, US Patent 9559388.
- P3. Gang Chen, **Hadi Ghasemi**, Xiaopeng Huang, James Loomis, Jonathan Tong, and Jianjian Wang “A continuous platform for fabrication of aligned polymer films“, United states 61/989588. 2013.
- P4. Svetlana Boriskina, Kenneth McEnaney, **Hadi Ghasemi**, Selcuk Yerci, Andrej Lenert, Sungwoo Yang, Evelyn Wang, and Gang Chen, “ Internally-heated thermal and externally-cool photovoltaic cascade solar system for the full solar spectrum utilization“, US Application: 61/868715. 2014
- P5. **Hadi Ghasemi**, Peyman Irajizad, Munib Hasnain, “Magnetic Icephobic Surfaces“, United States Application, 62/313893. 2016. (UH Patent)
- P6. **Hadi Ghasemi**, Peyman Irajizad, Abdullah Al-Bayati, “Nano-viscoelastic anti-icing surfaces“, US Application: 62572708. 2017. (UH Patent)
- P7. **Hadi Ghasemi**, Varun Kashyap, Riddhiman Medhi, T. Randall Lee, “Materials, Systems, and Methods for CO₂ capture and conversion“, US Application: 62624333. 2018. (UH Patent)

Conference Proceedings and Presentations

- C42. Parham Jafari and **Hadi Ghasemi**, “Interfacial Boundary Condition at An Evaporating Liquid-Vapor Interface“, ICNMM, Dubrovnik, Croatia, 2018.
- C41. Masoumeh Nazari and **Hadi Ghasemi**, “Kinetics of Thin Film Evaporation in Nano-Channels“, ICNMM, Dubrovnik, Croatia, 2018.
- C40. Peyman Irajizad and **Hadi Ghasemi**,“ On fundamentals of icephobic surfaces“, 6th world congress on adhesion and related phenomena, San diego, US, 2018.
- C39. Nazanin Farokhnia, Seyed Mohammad Sajadi, Peyman Irajizad, and **Hadi Ghasemi**, “Decoupled Hierarchical Structures for Suppression of Leidenfrost Phenomenon“, Pan American Nano, Nov. 2017.
- C38. Peyman Irajizad, Nazanin Farokhnia, Seyed Mohammad Sajadi and **Hadi Ghasemi**, “Toward extreme anti-icing surfaces“, Pan American Nano, Nov. 2017.

- C37. Varun Kashyap, Abdullah Al-Bayati, Seyed Mohammad Sajadi, Peyman Irajizad, Sing Hi Wang, and **Hadi Ghasemi**, “Flexible anti-clogging graphite film for scalable solar desalination by heat localization“, MRS, Boston, MA, 2017.
- C36. Ali Masoudi, Peyman Irajizad, Nazanin Farokhnia, Varun Kashyap, and **Hadi Ghasemi**, “Anti-scaling magnetic slippery surfaces“, MRS, Boston, MA, 2017.
- C35. Peyman irajizad, Abdullah Al-Bayati, Nazanin Farokhnia, and **Hadi Ghasemi**, “Magnetic slippery extreme icephobic surfaces“, MRS, Boston, MA, 2017.
- C34. Peyman Irajizad, Sahil Ray, Nazanin Farokhnia, Steven Baldelli, and **Hadi Ghasemi**, “Remote Droplet Manipulation on Self-Healing Thermally Activated Magnetic Slippery Surfaces“, MRS, Boston, MA, 2017
- C33. Nazanin Farokhnia, Seyed Mohammad Sajadi, Peyman Irajizad, and **Hadi Ghasemi**, “Decoupled Hierarchical Structures for Suppression of Leidenfrost Phenomenon“, MRS, Boston, MA, 2017.
- C32. Peyman Irajizad, Nazanin Farokhnia, and **Hadi Ghasemi**, ”Magnetic extreme icephobic surfaces“, IMECE, Phoneix, 2016.
- C31. Nazanin Farokhnia, Peyman Irajizad, and Mohammad Sajadi and **Hadi Ghasemi**, ”Bio-inspired smart thermal spreaders“, IMECE, Phoneix, 2016.
- C30. Seyed Mohammad Sajadi, Nazanin Farokhnia, Peyman Irajizad and **Hadi Ghasemi**, ”Decoupled hierarchical structures for suppression of Leidenfrost phenomenon“, IMECE, Phoneix, 2016.
- C29. Peyman Irajizad, Nazanin Farokhnia, and **Hadi Ghasemi**, ”Nano/pico droplets of ferrofluids“, ICNNM, Washington DC, 2016.
- C28. Nazanin Farokhnia, Peyman Irajizad, and Mohammad Sajadi and **Hadi Ghasemi**, ”Micro-nano structures for thin film evaporation“, ICNNM, Washington DC, 2016.
- C27. Seyed Mohammad Sajadi, Nazanin Farokhnia, Peyman Irajizad and **Hadi Ghasemi**, ”Flexible structures for localized solar steam generation“, ICNNM, Washington DC, 2016.
- C26. Peyman Irajizad, Nazanin Farokhnia, and **Hadi Ghasemi**, ”Nano/pico droplets of ferrofluids“, NEMB Conference, Houston, TX, 2016.
- C25. Peyman Irajizad, Nazanin Farokhnia, and **Hadi Ghasemi**, ”Dispensing nano/pico droplets of ferrofluids“, IMECE, Houston, TX, 2015.
- C24. Nazanin Farokhnia, Peyman Irajizad, Seyed Mohammad Sajadi, and **Hadi Ghasemi**, ”Rational micro/nano structuring for thin film evaporation“, IMECE, Houston, TX, 2015.

- C23. Nazanin Farokhnia and **Hadi Ghasemi**, "Optimal micro/nanostructure for thin film evaporation", Interpack 2015, San Francisco, CA, 2015.
- C22. George Ni, Nenad Miljkovic, **Hadi Ghasemi**, Svetlana V. Boriskina, Cheng-Te Lin, Yanfei Xu, and Gang Chen, "Non-Localized Solar Heating of Nanofluids for Steam Generation", MRS Fall Meeting, Boston, MA, 2014.
- C21. Xiaopeng Huang, James Loomis, **Hadi Ghasemi**, Yanfei Xu, Xiaobo Li, Jianjian Wang, Jonathan K. Tong, Nagarajan Thoppey, Cheng Te Lin and Gang Chen, "In-plane thermal conductivity measurement of freestanding film", MRS Fall Meeting, Boston, MA, 2014.
- C20. Yanfei Xu, Jianjian Wang, James Loomis, **Hadi Ghasemi**, Xiaopeng Huang, Xiaobo Li, Cheng-Te Lin, and Gang Chen, "Highly Aligned Polyethylene/Graphite Materials: Candidate Films for Thermal Management Application", MRS Fall Meeting, 2014.
- C19. James Loomis, **Hadi Ghasemi**, Xiaopeng Huang, Jianjian Wang, Nagarajan Thoppey, Jonathan Tong, Yanfei Xu, Xiaobo Li, Cheng-Te Lin, and Gang Chen, "Continuous fabrication platform for highly aligned polymer films", MRS Fall Meeting, 2014.
- C18. George Ni, Nenad Miljkovic, **Hadi Ghasemi**, Svetlana V. Boriskina, Cheng-Te Lin, Yanfei Xu, and Gang Chen, "Non-Localized Solar Heating of Nanofluids for Steam Generation", ASME 2014 8th International Conference on Energy Sustainability, Boston, MA, 2014.
- C17. **Hadi Ghasemi**, George Ni, James Loomis, Daniel Kraemer, Kenneth McEnaney, Amy Marie Marconnet and Gang Chen, "Highly efficient aerogel-based solar collectors", ASME 2014 8th International Conference on Energy Sustainability, Boston, MA, 2014.
- C16. **Hadi Ghasemi**, Amy Marconnet, George Ni, James Loomis, and Gang Chen, "Heat localization for efficient solar-thermal harvesting", ASME 2014 8th International Conference on Energy Sustainability, Boston, MA, 2014.
- C15. **Hadi Ghasemi**, Nagarajan Thoppey, Xiaopeng Huang, James Loomis, Xiaobo Li, Jonathan Tong, Jianjian Wang, and Gang Chen, "High thermal conductivity ultra-high molecular weight polyethylene (UHMWPE) films", IOTHERM 2014, Orlando, FL, 2014.
- C14. **Hadi Ghasemi**, Amy Marie Marconnet, Nenad Miljovic and Gang Chen, "Localized solar harvesting for phase-change of water", IMECE International Mechanical Engineering Congress, San Diego, CA, 2013.
- C13. **Hadi Ghasemi** and Alexander Mitsos, "A hybrid geothermal-solar power system: optimal design and operation", IMECE International Mechanical Engineering Congress, San Diego, CA, 2013.
- C12. **Hadi Ghasemi**, Alessio Tizzanini, Marco Paci, Alessio De Marzo and Alexander Mitsos, "Hybrid geothermal-solar power systems: modeling and optimization", ICEPE, Frankfurt, Germany, 2013.

- C11. **Hadi Ghasemi**, Alessio Tizzanini, Marco Paci and Alexander Mitsos, “Optimization of binary geothermal power systems”, ESCAPE, Lappeenranta, Finland, 2013.
- C10. **Hadi Ghasemi** and Alexander Mitsos, “Optimal design of a geothermal power plant using a validated simulator”, IMECE International Mechanical Engineering Congress, Houston, TX, 2012.
- C9. **H. Ghasemi** and C. A. Ward, “Mechanism of sessile water droplet evaporation”, APS March Meeting, Boston, MA, USA, 2012.
- C8. C. A. Ward, **H. Ghasemi**, and Peichun A Tsai. “Contact angle dependence on droplet size: line tension or adsorption at the solid-liquid interface”, 85th Colloid and Surface Science Symposium. McGill University. Canada, 2011.
- C7. **H. Ghasemi** and C. A. Ward. “Energy transport mechanisms at the solid-liquid interface during evaporation”. Second Annual Mechanical and Industrial Engineering Symposium. University of Toronto. Canada, 2011.
- C6. **H. Ghasemi** and C. A. Ward. “Energy Transport during sessile-water-droplet evaporation”. APS March Meeting, Dallas, TX. USA, 2011.
- C5. **H. Ghasemi** and C. A. Ward, “Sessile-water-droplet contact angle: the effect of adsorption”, 8th ASME International Conference on Nanochannels, Microchannels and minichannels, Montreal, 2010.
- C4. **H. Ghasemi** and C. A. Ward. “Contact angle of a pinned evaporating droplet”. First Annual Mechanical and Industrial Engineering Symposium, University of Toronto. Canada, 2010.
- C3. **H. Ghasemi** and C. A. Ward, “Determination of surface tension of solids”, 13th IACIS International Conference on Surface and Colloid Science, New York, 2009.
- C2. **H. Ghasemi**, A. H. Kokabi, M. A. Faghihi Sani, and Z. Riazi, “Alumina-copper eutectic bond strength: Contribution of preoxidation, cuprous oxides particles, and pores”, Austceram Conference, Sydney, Australia, 2007.
- C1. **H. Ghasemi**, A. H. Kokabi, M. A. Faghihi Sani, and Z. Riazi, “ Effect of copper oxide layer thickness and oxygen partial pressure on mechanical properties of alumina-copper eutectic bond”, Ceramics International Conference, Tehran, 2007. (Awarded as the best presentation)

Textbook

- B1. H. Kokabi and **H. Ghasemi**, “Ceramics Joining”, Sharif University of Technology Press, 2008.

Teaching Experience

Description of Courses Taught and Developed

- Thermodynamics: This course presents the laws that govern energy and entropy transfer and the ways that these transports manifest themselves in the system behavior. The objectives of MECE 2334 are as follow: (1) To develop the fundamental principles and laws of thermodynamics and explore these principles in the system behavior, (2) To formulate the models necessary to study, analyze and design the thermo-fluid systems through the application of these principles, (3) To develop problem-solving skill essential to good engineering practice in the thermo-fluid system field, (4) To develop an understanding of sound engineering design of thermo-fluid systems.
- Conduction and Radiation: This course covers advanced fundamental aspects of conduction and radiation. In the first part, solution of heat equation in one and multi dimensional geometries exposed to a range of boundary conditions are discussed. In the second part, fundamentals of radiative heat transfer among surfaces and in enclosures, the radiative properties of surfaces, multi-mode heat transfer, and near-field and far-field electromagnetic wave theories are presented.
- Interfacial Phenomena: As the size of instruments and structures are demandingly shifted toward micro-nano scales, the role of interfaces become paramount. That is, physical principles governing the operation of these instruments should be modified to include interface roles. This course presents a theoretical framework to study the characteristics of interfaces and their contribution to the small-scale systems. The theory will be accompanied by classroom demonstrations.

Other teaching experience

University Lecturer: MIT

2013

- Thermo-Fluid Engineering I: This 2nd year course covers three topics: Thermodynamics, Fluid mechanics and Heat transfer.

University Lecturer: University of Toronto

2011

- Mechanical and Thermal Energy Conversion: I developed the course syllabus and laboratory manual, conducted the lectures, designed the assignments, midterm and final exams. This 3rd year course covers the thermodynamics laws and the fundamentals of heat engines and refrigeration systems.

Awards and Honours

- **2018** College Research Excellence Award
- **2017** NASA iTech Top Three Innovator
- **2017** University Teaching Excellence Award, University of Houston

- **2016** Bill D. Cook Professorship
- **2016** AFOSR Young Investigator Award
- **2016** College Teaching Excellence Award, University of Houston
- **2015** Departmental Citizenship Award, University of Houston
- **2014** Finalist for World Technology Award in Energy Category
- **2014** MIT PDA Travel Grant
- **2012** NSERC Postdoctoral Fellowship for two years
- **2011** Leadership Award, University of Toronto
- **2010** Russell Reynolds Award in Thermodynamics, University of Toronto

Professional Service and Membership

Professional Service

- Vice Chair, NanoEngineering for Energy and Sustainability (NEES) Steering Committee of ASME, 2015-2017
- Topic organizer of Micro-Nano Poster Forum, IMECE 2015 and IMECE 2016
- Guest editor of Journal of Nanotechnology in Engineering and Medicine (JNEM)
- Topic organizer IMECE 2014, IMECE 2015, IMECE 2016, ICNMM 2016, ICNMM 2017
- Member of American Society of Mechanical Engineers (ASME)
- Member of American Physical Society (APS)
- Member of American Chemical Society (ACS)

Reviewer

- Science, Nature Energy, Nature Sustainability, Nature Communications, Science Advances, Nano Letters, Advanced Materials, Advanced Functional Materials, ACS Nano, Nano Energy, PNAS, Joule, Journal of Materials Chemistry A, Journal of Physical Chemistry, Langmuir, Applied Physics Letter, Advances in Colloid and Interface Science, International Journal of Heat and Mass Transfer, International Journal of Thermal Sciences, International Journal of Multiphase Flow, Current Opinion in Colloid and Interface Science, Colloids and Surfaces A, Applied Energy, Energy, Journal of Materials Science & Engineering C, Applied Surface Science and others