



The Department of MECHANICAL ENGINEERING



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Mechanical Engineering

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Kim, Jungho



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Keystone Professor
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Research Interests

Phase change heat transfer process
investigation of fundamental heat transfer mechanisms in pool and flow boiling and spray cooling in Earth and microgravity environments
heat exchange within complex heat exchangers
building thermal energy storage and their use in demand/response and energy trading.

Education

Ph.D., University of Minnesota, Minneapolis, 1990

Honors and Awards

Poole and Kent Teaching Award for Senior Faculty (2016)
University System of Maryland Regent's Faculty Award (2016)
ASME Fellow (2005)

Professional Memberships and Service

Associate Editor, International Journal of Multiphase Flow
Associate Editor, Microgravity Science and Technology
Associate Editor, International Journal of Energy & Technology
Editorial Advisory Board, Experimental Thermal Fluid Science
Past Chair of the ASME K-13 Committee on Multiphase Heat Transfer

Selected Publications

2016

Scammell, A. and Kim, J., "A Study of Gravitational Effects on Single Elongated Bubbles", [Int. Journal of Heat and Mass Transfer](#), Vol. 99, pp. 904-917, 2016.

Fukatani, Y., Orejon, D., Kita, Y., Takata, Y., Kim, J., and Sefiane, K., "Effect of ambient temperature and relative humidity on hydrothermal waves (HTWs) of volatile drops", *Physical Review E*, 93, 043103, 2016.

Solotych, V., Lee, D., Kim, J., Amalfi, R.L., and Thome, J. "Boiling Heat Transfer and Two-Phase Pressure Drops within Compact Plate Heat Exchangers: Experiments and Flow Visualizations", [Int. Journal of Heat and Mass Transfer](#), Vol. 94, pp. 239-253, 2016.

2015

Scammell, A. and Kim, J., "Heat transfer and flow characteristics of rising Taylor bubbles", Int. Journal of Heat and Mass Transfer, Vol. 89, pp. 379–389, 2015.

Sáenz P.J., Valluri P., Sefiane K., Matar O. K., and Kim J., "Two-phase transient evaporation of sessile drops with three-dimensional phenomena", J. of Fluid Mechanics, Vol. 772, pp. 705–739, 2015.

Solotych, V., Kim, J., and Dessiatoun, S., "Local Heat Transfer Measurements Within a Representative Plate Heat Exchanger Geometry Using Infrared (IR) Thermography", J. of Enhanced Heat Transfer, Vol. 21, 4–5, pp. 353–372, 2015.

2014

Fukatani, Y., Wakui, T., Hussain, S., Kohno, M., Takata, Y., Sefiane, K., and Kim, J., "Analysis of Droplet Evaporation using IR Thermography", Applied Thermal Engineering, Manuscript 1067103, 2014.

Bhavani, S., Narayanan, V., Qu, W., Jensen, M., Kandlikar, S., Kim, J., and Thome, J., "Boiling Augmentation with Micro/Nanostructured Surfaces: Current Status and Research Outlook", Nanoscale and Microscale Thermophysical Engineering, Vol. 18, No. 3, pp. 197–222, 2014.

2013

Sefiane, K., Fukutani, Y., Takata, Y., and Kim, J., "Thermal Patterns and Hydrothermal Waves (HTWs) in Volatile Drops", Langmuir, 29 (31), pp. 9750–9760, 2013.

Trainer, D., Kim, J., and Kim, S.J., "Heat Transfer and Flow Characteristics of Air-Assisted Impinging Water Jets", International Journal of Heat and Mass Transfer, Vol. 64, 501–513, 2013.

Jung, J.H., Kim, S.J., and Kim, J. "Observations of the Critical Heat Flux Process During Pool Boiling of FC-72", ASME Journal of Heat Transfer, Vol. 136, pp. 041501–1–12, 2013.

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2012

Raj, R., Kim, J., and McQuillen, J., "Pool Boiling Heat Transfer in Microgravity: Results from the Microheater Array Boiling Experiment (MABE) on the International Space Station", ASME Journal of Heat Transfer, Vol. 134, pp. 101504–1–14, 2012

Kim, T.H., Kommer, E., Dessiatoun, S., and Kim, J., "Measurement of Two-Phase Flow and Heat Transfer Parameters Using Infrared Thermometry", International Journal of Multiphase Flow, Vol. 40, pp. 56–67, 2012

Raj, R., Kim, J., and McQuillen, J., "On the Scaling of Pool Boiling Heat Flux with Gravity and Heater Size", ASME Journal of Heat Transfer, Vol. 134, No. 1, pp. 011502, 2012

2011

Abbasi, B. and Kim, J. "Development of a General, Dynamic Pressure-Based, Single-Phase Spray Cooling Heat Transfer Correlation", ASME Journal of Heat Transfer, Vol. 133, pp. 052201–1 to 052201–10, May 2011, DOI: 10.1115/1.4002779.

Abbasi, B. and Kim, J. "Prediction of PF-5060 Spray Cooling Heat Transfer and Critical Heat Flux", ASME Journal of Heat Transfer, Vol. 133, pp. 101504–1 to 101504–13, August, 2011, Issue 10, DOI: 10.1115/1.4004012.

2010

Abbasi, B. and Kim, J. "Dynamic Pressure Based Prediction of Spray Cooling Heat Transfer Coefficients", International Journal of Multiphase Flow, 10.1016/j.ijmultiphaseflow.2010.01.007, Vol. 36, pp. 491–502, 2010.

Raj, R., Kim, J., and McQuillen, J. "Gravity Scaling Parameter for Pool Boiling Heat Transfer", ASME Journal of Heat Transfer, Vol. 132, pp. 091502–1 to 091502–9, September 2010, DOI: 10.1115/1.4001632.

Raj, R. and Kim, J. "Heater Size and Gravity Based Pool Boiling Regime Map: Transition Criteria Between Buoyancy and Surface Tension Dominated Boiling", ASME Journal of Heat Transfer, Vol. 132, pp. 091503–1 to 091503–10, September 2010, DOI: 10.1115/1.4001635.

2009

Moore, K.A., Kim, J., and Joshi, Y.K. "Heat Transfer and Fluid Flow in Shrouded Pin Fin Arrays With and Without Tip Clearance", International Journal of Heat and Mass Transfer, Vol. 52, pp. 5978–5989, 2009.

Kim, J. "Review of Nucleate Pool Boiling Heat Transfer Mechanisms", International Journal of Multiphase Flow, Vol. 35, pp. 1067–1076, 10.1016/j.ijmultiphaseflow.2009.07.008, 2009.

2007

Moghaddam, S., Lawler, J., Currano, J., and Kim, J. "A novel method for measurement of total hemispherical emissivity," AIAA Journal of Thermophysics and Heat Transfer, Vol. 21, No. 1, pp. 128–133, 2007.

Kim, J. "Spray cooling heat transfer: The state of the art," International Journal of Heat and Fluid Flow, Vol. 28, No. 4, pp. 753–767, 2007.

Coursey, J.S., Kim, J., and Kiger, K.T. "Spray cooling of high aspect ratio open microchannels," *Journal of Heat Transfer*, Vol. 129, No. 8, pp. 1052–1059, 2007.

2006

Henry, C.D., Kim, J., and McQuillen, J. "Dissolved Gas Effects on Thermocapillary Convection During Boiling in Reduced Gravity Environments," *Heat and Mass Transfer*, Vol. 42, pp. 919–928, 2006.

Silk, E.A., Kim, J., and Kiger, K. "Spray Cooling of Enhanced Surfaces: Impact of Structured Surface Geometry and Spray Axis Inclination", *International Journal of Heat and Mass Transfer*, Vol. 49, pp. 4910–4920, 2006.

2005

Coursey, J. S., Kim, J., and Boudreaux, P.J., "Performance of graphite foam evaporator for use in thermal management," *Journal of Electronic Packaging*, Vol. 127, No. 2, pp. 127–134, 2005.

Henry, C.D., Kim, J., "Thermocapillary Effects on Low-G Pool Boiling From Microheater Arrays of Various Aspect Ratio," *Microgravity Science and Technology*, XVI, pp. 170–175, 2005.

Horacek, B., Kiger, K., Kim, J., "Single Nozzle Spray Cooling Heat Transfer Mechanisms," *International Journal of Heat and Mass Transfer*, Vol. 48, No. 8, pp. 1425–1438, 2005.

Myers, J.G., Yerramilli, V.K., Hussey, S.W., Yee, G.F., and Kim, J., "Time and space resolved wall temperature and heat flux measurements during nucleate boiling with constant heat flux boundary conditions," *International Journal of Heat and Mass Transfer*, Vol. 48, No. 12, pp. 2429–2442, 2005.

Henry, C.D., Kim, J., Chamberlain, B., and Hartmann, T.G., "Heater aspect ratio effects on pool boiling heat transfer under varying gravity conditions," *Experimental Thermal and Fluid Science*, Vol. 29, No. 7, pp. 773–782, 2005.

Related News

[Kim to Direct Undergraduate Studies, Pertmer to Co-Direct](#)

Keystone Professors to spearhead Undergraduate Studies program. November 4, 2018

[UMD Engineering for Social Change Class Awards Non-Profit V-LINC \\$10,000 Grant to Support Custom Assistive Technology Program](#)

Grant marks more than \$30,000 in student-awarded grants given through landmark engineering philanthropy course. December 14, 2016

[Kim Receives USM Regents' Faculty Award for Excellence in Teaching](#)

University System of Maryland award recognizes Kim for his contributions to teaching. April 15, 2016

[Kim Awarded New US Patent](#)

New patent is designed to optimize energy consumption of a building. March 16, 2016

[Kim to Chair Two Conferences](#)

Professor Jungho Kim to chair two conferences focusing on the areas of boiling, condensation and heat transfer. September 22, 2014

[Kim Presents Keynote at International Conference on Multiphase Flows](#)

Professor Jungho Kim delivers keynote and embarks on JSPS Fellowship in Japan. May 30, 2013

[Graduate Student Michael Siemann Installs WeatherBug Weather Station in Nepal](#)

Station will aid pilots in navigating extreme regional weather changes. March 25, 2013

[That's Hot: Engineers to Test Boiling at Zero-Gravity](#)

Experiment launches with Shuttle Discovery to International Space Station. February 24, 2011

[Jungho Kim Collaborates with NASA on Zero-Gravity Experiment](#)

ME professor examines the effects of boiling in zero-gravity. February 3, 2011

[Visiting German Students Complete Engineering Undergraduate Requirements at UMD](#)

Engineering interns from Mannheim, Germany enjoy UMD experience. November 30, 2009

[Pi Tau Sigma Announces Award Recipients](#)

Dr. Solares & Greg Teitelbaum honored for fall 2008 instruction. February 6, 2009

[Engineers Without Borders Featured in Local Magazine](#)

ME professors, students featured in local community magazine. November 21, 2008

[Student, professor fly on 'Vomit Comet'](#)

ME student Rishi Raj, professor Jungho Kim flew on European Space Agency ship. July 16, 2008

[Dr. Kim Promoted to Full Professor](#)

Phase Change Heat Laboratory leader advances to new rank June 19, 2008

[Engineers Without Borders Installs Solar Systems in Burkina Faso](#)

Sustainable power sources help illuminate community in developing African country. February 1, 2008

[Engineering Change in Burkina Faso](#)

Engineers Without Borders team improves quality of life for African village. February 16, 2007

Pi Tau Sigma Honors Faculty, Teaching Assistants

Faculty Appreciation and Outstanding Teaching Assistant awards given by Pi Tau Sigma. December 11, 2006

Mechanical Engineering Honors Prof. James Wallace & Faculty

Mechanical Engineering faculty were honored at the Faculty Recognition Event and Dinner on Friday, May 12. May 15, 2006

Pi Tau Sigma Honors Faculty, Teaching Assistant

Pi Tau Sigma honored two faculty members and a teaching assistant during their initiation ceremony on May 10th. May 15, 2006

Pi Tau Sigma Honors Faculty, Teaching Assistants

The Tau Mu Chapter of Pi Tau Sigma, honors Abhijit Dasgupta and Victor Ovchinnikov on December 13th. December 15, 2005

Associate Professor Jungho Kim Appointed ASME Fellow

Associate Professor Jungho Kim was recently elevated to Fellow status as a member of The American Society of Mechanical Engineers. November 15, 2005

ME Ph.D. Student, Chair Attend Exchange Conference in Russia

Bar-Cohen and Henry were among five pairings of American professors and their students sponsored by the NSF. June 15, 2005

Cho Awarded Outstanding Teaching Assistant Appreciation Award from Pi Tau Sigma

Professor of Mechanical Engineering Jungho Kim is the faculty advisor for the organization. February 15, 2005

INTEL SPONSORS ELECTRONIC COOLING COMPETITION

Mechanical Engineering Graduate and Undergraduate Students to Participate in Fall, Spring Semester Competitions. October 15, 2003

Students' Solar House Begins to Take Shape

The student team poured the concrete foundation on campus for a completely solar-powered house. March 15, 2002

Microgravity Pool Boiling Experiment Upgraded to 'Flight Definition' by NASA

Experiment by Professor students of the Phase Change Heat Transfer Laboratory to study subcooled pool boiling of FC-72 has been upgraded to "flight definition" by NASA. February 15, 2001