



The Department of MECHANICAL ENGINEERING



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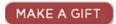
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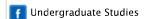
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Kim, Jungho



Professor
Keystone Professor
Leader, Thermal, Fluids & Energy Systems Division
Department of Mechanical Engineering
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University of Maryland

College Park, MD 20742 Email: kimjh@umd.edu Phone: 301-405-5437 Fax: 301-314-9477

Website

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", <u>Int. Journal of Heat and Mass Transfer</u>, 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.

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Scammell, A. and Kim, J., "Heat transfer and flow characteristics of rising Taylor bubbles", <u>Int. Journal of Heat and Mass Transfer</u>, 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", <u>J. of Fluid Mechanics</u>, 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", <u>Applied Thermal Engineering</u>, Manuscript 1067103, 2014.

Bhavnani, 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", <u>Langmuir</u>, 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 <u>Journal of Heat Transfer</u>, Vol. 136, pp. 041501-1-12, 2013.

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 <u>Journal of Heat Transfer</u>, 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", <u>International Journal of Multiphase Flow</u>, 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 <u>Journal of Heat Transfer</u>, 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, DOJ: 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

Moores, 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," *AlAA 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.

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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., Yerrramilli, 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 Appreication 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 Jungo 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

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