

Heat management in industrial devices considering flow

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Venue: Faculty of Engineering Bldg. 2, Room 31A

Abstract:

Our research focuses on various scale thermal-fluid phenomena, combining principles from physics, chemistry, and applied mathematics. Some of our current research topics include the efficient management of fluid flow for effective thermal regulation in various devices such as refrigerators, ovens, and fuel cells. Our laboratory utilizes both experimental methods and simulations to analyze and understand these crucial thermal management processes. Some of our current research topics include:

1. Investigating flow patterns during jet impingement around a concave surface to better understand heat transfer and its effect on fluid dynamics.
2. Analyzing flow path shapes to improve the performance of solid oxide fuel cells (SOFCs) for more efficient energy conversion.
3. Measuring the temperature field of the curved surface where a cooling jet collides using temperature-sensitive phosphors.
4. Analyzing the temperature field of a droplet colliding with a hot surface to understand the microscopic heat transfer interaction between liquid and solid.

Research interests:

- Experimental fluid dynamics.
- AI design considering energy consumption.

Career:

2020.03 – Present Associate Professor, School of Mechanical Engineering, Pusan National University, Korea
 2016.03 - 2020.02 Assistant Professor, School of Mechanical Engineering, Pusan National University, Korea
 2015.08 - 2016.02 Post-Doctoral Researcher, Department Mechanical Engineering, Pohang University of Science & Technology, Korea

Education:

2015.09 Ph.D. in Mechanical Engineering, Pohang University of Science & Technology
 2010 B.E. in Mechanical Engineering, Pusan National University



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