Surface Treatment for Boiling Heat Transfer Enhancement

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OBJECTIVE

Investigate the effect of free particles as a new surface treatment method for enhancement of boiling heat transfer

IMPACT

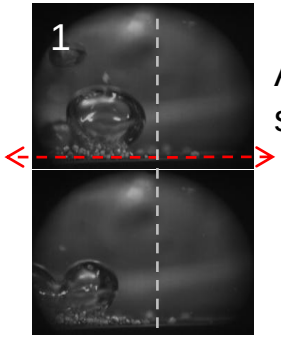
- A better understanding of the roles of free particles for boiling heat transfer enhancement
- Efficient heat transfer technique without fabrication cost

APPROACH

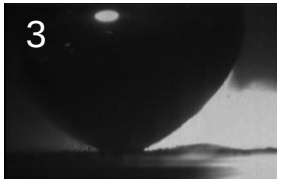
Explore the effects of particle size and number of particles

Experimental setup

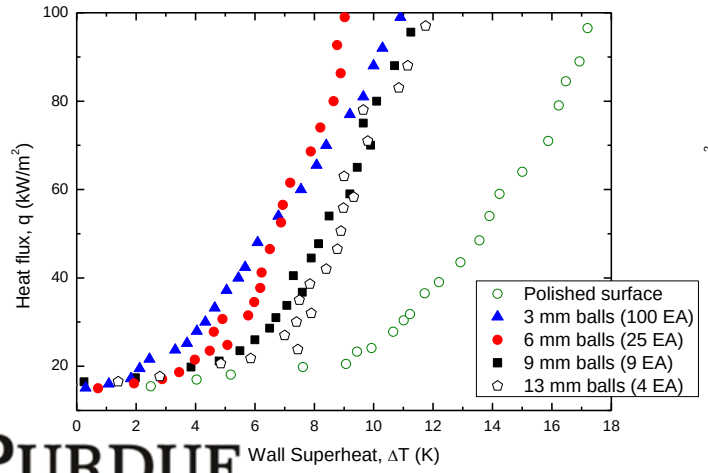
A region covered by free particles (150~440 μm)



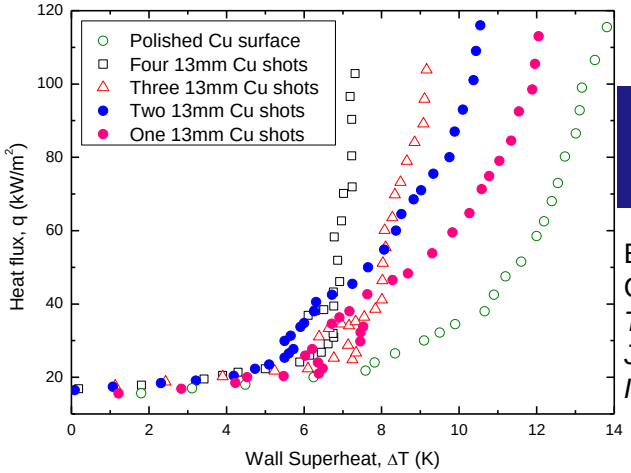
A polished-surface region



Particles providing preferential nucleation sites
1: 150~440 μm
2: 13 mm
3: 10 μm



Effect of particle size



Effect of number of particles

SELECTED PUBLICATIONS

B.J. Jones, J. P. McHale, and S. V. Garimella, 2009, *ASME J. Heat Transfer* **131**, 121009.
J. P. McHale and S. V. Garimella, 2010, *Int. J. Multiphase Flow* **36**, 249-260.

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