Jason Chan

Ph.D Student

University of Wisconsin - Madison

Multiphase Flow Visualization and Analysis Laboratory

Solar Energy Laboratory

jason.chan@wisc.edu

Hometown: Taipei, Taiwan

Effects of Obstructions on the liquid film in annular flow

Advisors:

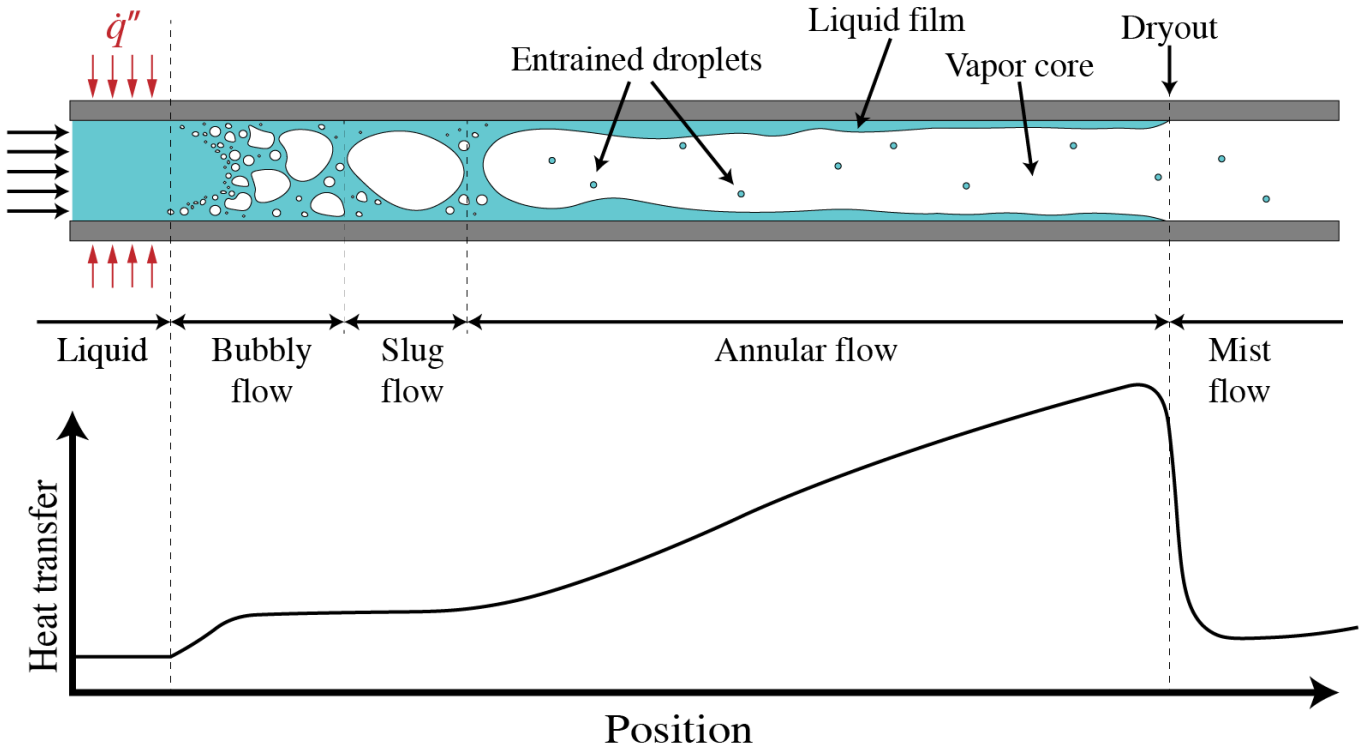
Greg Nellis

Arganthaël Berson

Kris Dressler

Flow Boiling & Annular Flow

- In flow boiling, the maximum heat transfer occurs in the annular flow regime. This regime is characterized by a vapor core, a liquid film, and entrained droplets.
- The heat transfer coefficient associated with the flow increases with decreasing liquid film thickness, until the liquid film dries out completely.
- The effects and possible enhancements of flow obstructions on maintaining a thin liquid film is of interest.



Objectives

- Identify dimensionless values that characterize the flow behavior around and down stream of the obstructions
- Scale the results from a falling film water flow and implement experiments in the annular refrigerant flow.
- Validate scaled results with the goal of identifying regimes in which the downstream film thickness behaves in the annular flow.