

July 2018

## Bachelor/Master thesis – experimental

# Experimental study of flow boiling in horizontal microchannel

### Background

Study on flow boiling in a microchannel has been attracted by many researchers regarding its critical application in a cooling system of high-speed processors and compact electronic devices. However, the behavior of flow boiling in the microchannel has not been yet well understood due to its complexities and instabilities.

### Content of the Thesis

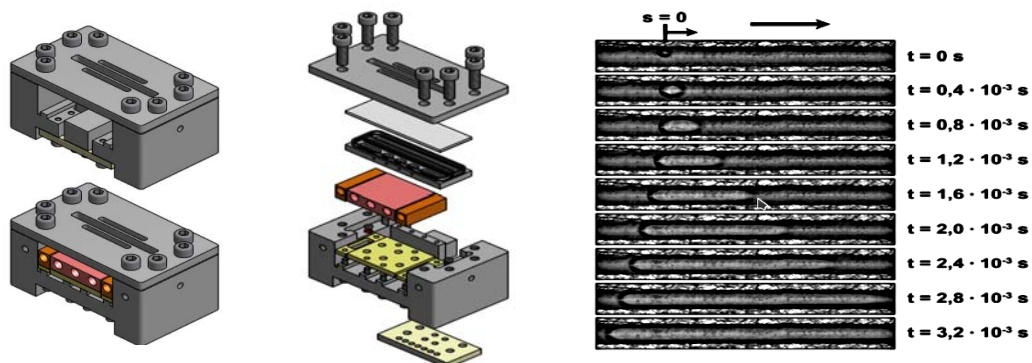
This thesis aims at studying the flow boiling characteristics of water in a single rectangular microchannel in typical thermodynamic conditions, i.e. for saturation temperatures ranging from 110°C to 130°C. To achieve this goal, an experimental test facility was specifically designed and built to conduct the evaporation experiments at IMVT (Institute for Micro Process Engineering). This test facility allowed performing flow regime visualizations, pressure drop and heating transfer measurements in microchannel. The goal of this work is to capture high temporal resolution experimental flow boiling data and image processing using MATLAB for two-phase flow pattern characterization. The influence of saturation temperature and microchannel dimension on the flow patterns and their transitions should be investigated.

### Beneficial Skills

- Flow and Heat transfer measurement techniques, MATLAB

### You will learn

- Methods of scientific research
- Two-phase boiling flow study at microscale



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