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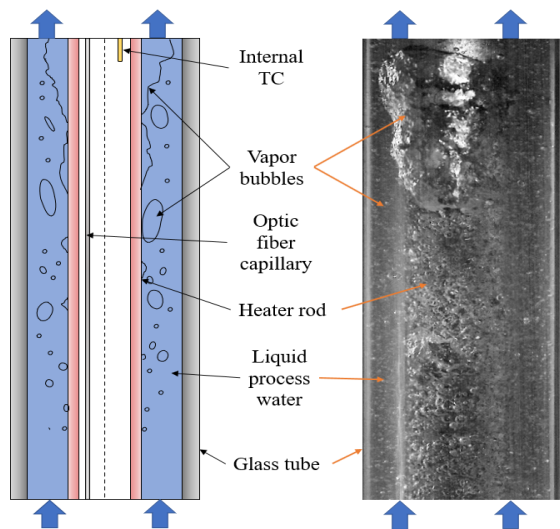
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# Research Activities and Interests Overview

- Water critical heat flux (CHF) under reactor conditions
- Performance of new ATF (Accident Tolerant Fuel) cladding alloys developed to avoid oxidation of the material under CHF conditions, and, consequently, reduce the risk of major accidents (e. g. explosion due to the formation of hydrogen during the oxidation process)
- Effect of a cosine heat flux profile, which is a closer condition to a nuclear reactor, on the CHF compared to uniform heating
- Reflood instantaneously after DNB is achieved, and after DNB is kept for a period of time
- Transient heat flux effects on the CHF compared to steady-state conditions

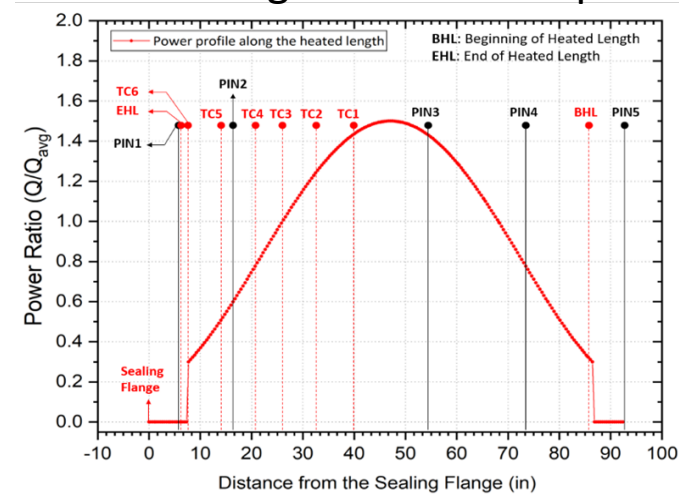
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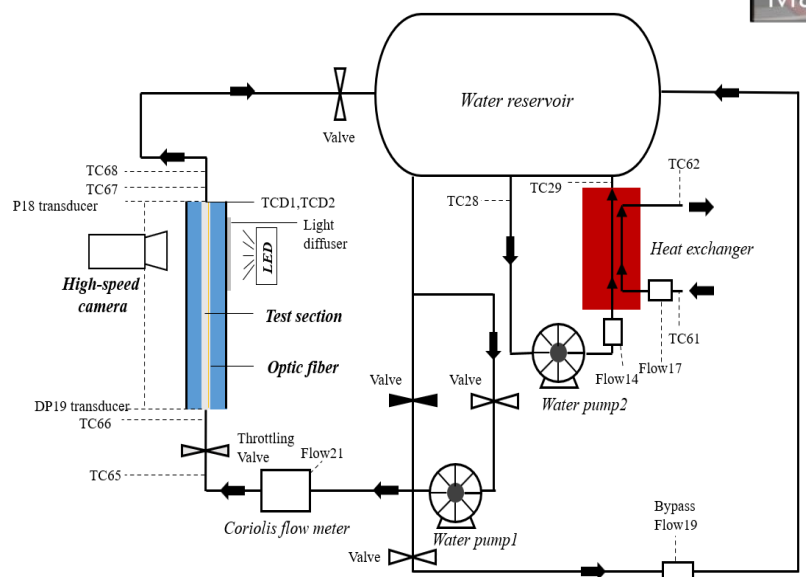
Low Pressure Loop



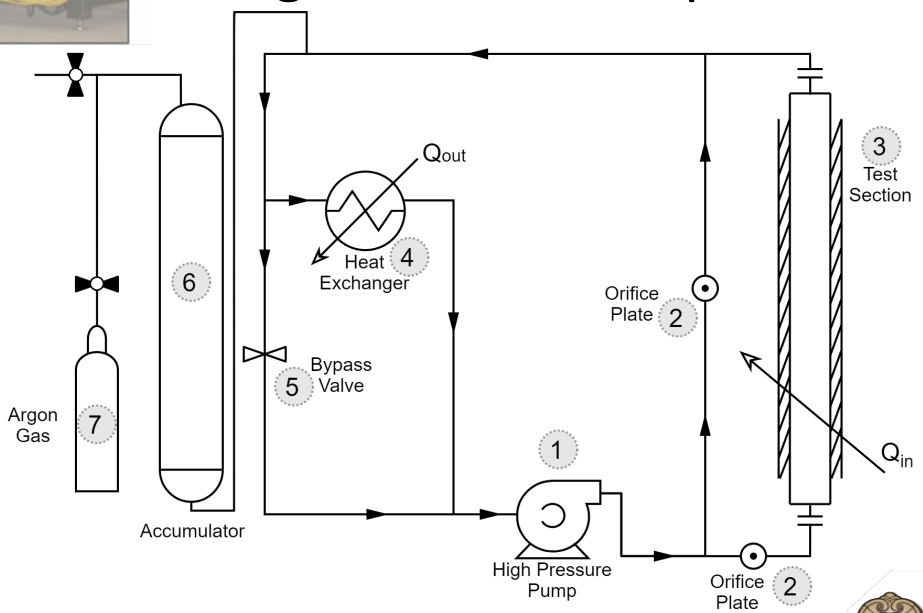
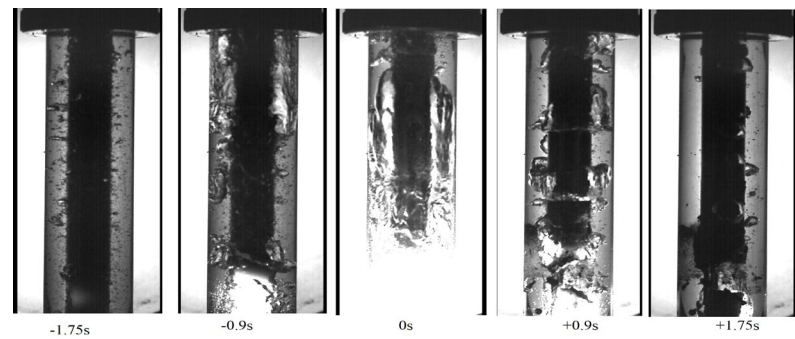
Heat flux profile in the High Pressure Loop



High Pressure Loop



CHF occurrence in the Low Pressure Loop



# Research Activities and Interests Overview

- Other research activities and interests
  - Thermal stress measurements under CHF conditions using optical fiber sensors
  - Heat transfer of supercritical Water and CO<sub>2</sub> in a tube bundle focused to nuclear reactors
  - Sodium Fast Reactors
    - Thermal stratification effects
    - Fission product retention in liquid sodium
    - Oxygen concentration evaluation and removal
  - Pulsating heat pipes (PHP) using sodium as working fluid applied to small-scale reactors

