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Mechanical Engineering

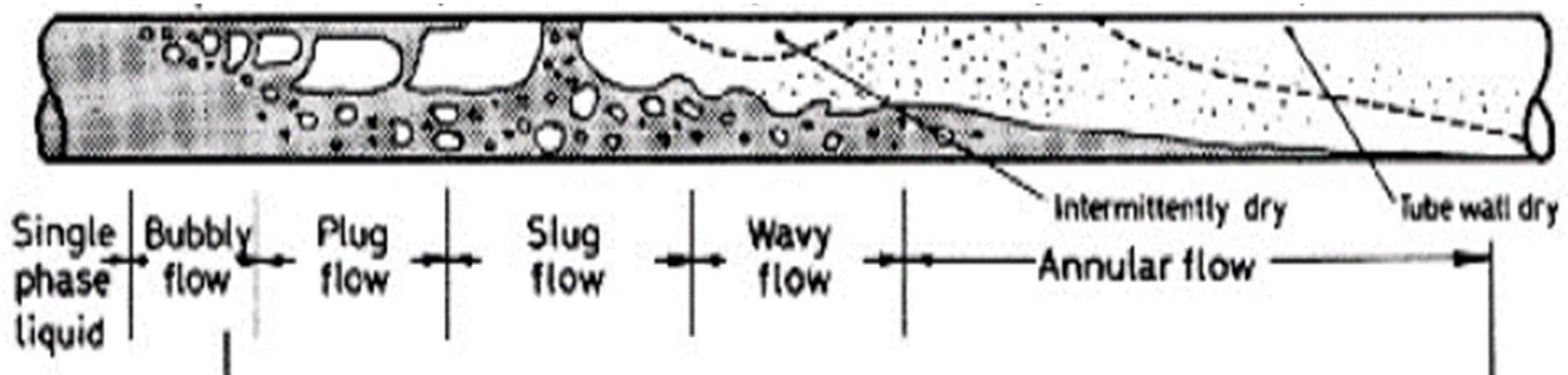
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Thesis: Instantaneous vapor thin-film temperature measurement in multiphase annular and pulsed flow

Motivation



- Nearly saturated liquid flowing through a heated pipe could intermittently evaporate and dry out, significantly decreasing the local heat transfer rate at such locations.
- Through past work, we see that rewetting could occur following intermittent dry outs.
- Current temperature measurement technique is limited to liquid phase thin films.
- To better characterize the thermal behavior of dryout-rewet cycles, we need to develop a similar or new temperature measurement technique.

Goals

- Determine the feasibility of using previously developed optical temperature measurement technique.
- Consider fabricating thin film resistance sensors or hot-film sensors by etching patterns on FTO-coated conductive glass windows (right) as alternative methods.
- Implement chosen technique on Annular Flow facility to gather vapor heat transfer data.

