

## **Keynote Lecture:**

**By**

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***NANOFLUIDS AND CRITICAL HEAT FLUX,  
AN EXPERIMENTAL AND ANALYTICAL STUDY***  
*DO WE NEED THE FLUID FOR OPERATION OR ONLY PREPARATION?*

In recent years, nanofluids have attracted significant attention of the heat and mass transfer research community. These fluids are obtained by suspending nanoparticles, the average size being between 10 and 40 nm, in regular fluids. It has been found by several researchers that the thermal conductivity of these fluids can be significantly increased when compared to the same fluids without nanoparticles. Also, it was found that the pool boiling critical heat flux is substantially increased when nanofluids are used. The work reported in this presentation is motivated by the increase in critical heat flux and the mechanisms that cause this increase. Work reported will include how to experimentally evaluate the impact of different nanoparticle characteristics like particle concentration, size and thermal conductivity on critical heat flux at saturated and subcooled conditions. This will include experimental findings about the pool boiling critical heat flux for different nanofluids at different conditions. Finally, reasons accounting for the increase and analytical models for evaluating critical heat flux at saturated and subcooled conditions in nanofluids will be presented and discussed.