## **Boiling Test Chamber CAD & Images**

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**Research goal:** Gather quantitative data on boiling performance based on changes to nano-surface structures.

**Project Goal:** Design and construct a boiling chamber to conduct boiling tests in. The chamber must contain a heating element and thermocouple, and remain water tight at high temperatures. The chamber must be clear for easy visual confirmation of proper setup up and boiling performance. The teflon block must contain 0.025" holes for precise thermocouple placement to improve heat flux calculations.

**Results:** All design challenges met. System was designed and machined over the course of a few weeks, and we were able to begin initial tests within this chamber at the end of the semester.



Illustration 1: Teflon Block: Machined to 0.005 accuracy.



Illustration 2: CAD Assembly without top plate



Illustration 3: Fully integrated assembly. Note the thermocouple and heating element at the top.



Illustration 4: Another view of the test chamber.



Illustration 5: Close up view of the test chamber. The copper heating element that would go in the teflon block isn't installed at this point.