

## **Dancing Bubbles Used to Study Boiling Systems**

Have you ever seen water dance to Taylor Swift? Or rock out to Crazy Train? Visit our exhibit to see what we're talking about and have fun blowing some bubbles. Our amazing senior design team will 'boil down' our Multidisciplinary Senior Design project and leave you feeling 'cool.'

Boiling systems, such as a boiling pot of water, are incredibly effective at removing vast amounts of heat from a surface. For example, bubbles dissipate heat from the bottom of the pot of boiling water via bubble nucleation. However, boiling is a complex and chaotic phenomenon, and the fundamental physics are not well understood. If a greater understanding of bubble nucleation can be acquired, then more efficient designs for applications such as jet engines, computer chips, and nuclear plants can be developed. For this reason, the RIT Thermal Analysis, Microfluidics, and Fuel Cell Laboratory has proposed a system that is capable of studying the basic fundamentals of boiling. Our Multidisciplinary Senior Design team was tasked with designing and fabricating a device that is capable of conducting such an investigation. In order to study boiling fundamentals, our device was required to create a stable liquid meniscus, control the liquid volume of the meniscus under varying heating scenarios, and oscillate the meniscus over a range of frequencies. It's anticipated that our device can be utilized by the RIT Thermal Analysis, Microfluidics, and Fuel Cell Laboratory in order to gather a more robust comprehension of bubble nucleation and enhance heat dissipation in a broad range of applications.