

## **“Theoretical Determination of Adsorption Effects on Latent Phase Change”**



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**Bio:** Aaron Wemhoff earned his PhD from the University of California, Berkeley in 2004. He has been an Assistant Professor of Mechanical Engineering at Villanova University since 2008. He worked for three years as a Thermal-Fluids Engineering Analyst at Lawrence Livermore National Laboratory prior to joining Villanova. He is currently on sabbatical at BNC where he is working with the Nanoscale Transport Research Group under Prof. Tim Fisher.

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**Abstract:** Researchers at BNC and AFRL are examining methods to create highly porous foams out of carbon nanopetals. These foams contain a high surface-to-volume ratio, and therefore the introduction of a liquid into the foam experiences significant adsorption effects during a boiling process. Furthermore, researchers have discovered a means to chemically treat the nanopetals to strengthen the petal-fluid interaction. This talk discusses the application of a statistical thermodynamic theory to estimate the latent phase change behavior of a heated liquid film near a solid surface including the effects of adsorption on the latent enthalpy. Agreement between portions of the theory and experimental results is shown, and limitations in the theory are provided.