

From Aerogels to Oysters: A Research Journey

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Abstract: The various research experiences I encountered throughout graduate school serve as the inspiration for this presentation. The talk begins with an introduction to aerogels. Aerogels are the least-dense solid-state material in existence and have remarkable thermodynamic and material properties. The presentation then takes you to the middle of the Pacific Ocean and discusses different research projects involving underwater acoustics. One of these projects explores “the bubble hypothesis,” which investigates the correlation between military sonar exercises and marine mammal stranding events. Another project involves an investigation of the dolphin biosonar system for improvement of technological sonar systems. The use of ultrasonics for detection of micrometastases in human lymph nodes is also presented. The talk then returns you to the east coast where current and proposed research projects at Salisbury University will be presented. One of these projects involves a biomechanics investigation into surf-related spinal injury victim extraction techniques. Finally the presentation concludes with proposed underwater acoustics projects in the Chesapeake Bay and Atlantic Ocean.