

Physics Colloquium, University of South Florida
3:00 pm, Friday, April 13th, 2018, ISA 2023
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Nucleation of ice from supercooled water, how do we measure this stochastic process and perhaps change its likelihood

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The stochastic nature of the nucleation of a supercooled solution is not always realized or well-defined. There exists an inherent spread of nucleation temperatures of any given sample which is repeatedly supercooled, frozen, and then thawed, in the same container, even when the nucleation is occurring at the same site. Classical nucleation theory predicts such a spread but does not provide any molecular level interpretation for the value of the spread and thus it has been the subject of some speculation. Our data shows that there is a lower limit to the value of the spread which is related neither to the efficiency of the best nucleation site nor the number of times the sample is cooled and the nucleation temperature measured.

Peter Wilson is Associate Dean Global Engagement at the University of Tasmania. His research and teaching home is within the Institute for Marine and Antarctic Studies, in Hobart, where he teaches Cryosphere and Oceanography courses. Peter currently holds visiting appointments at Scripps Institution of Oceanography, where he has been on staff since 2007, and the University of Tsukuba, Japan, where he was Director of the Global 30 Program from 2010 to 2014.

Peter gained a Masters in Electronics from Otago University on Dunedin, New Zealand followed by a PhD in Optics from the same institution. As a physicist, Peter has for many years studied ice nucleation, supercooling, ice binding proteins and ice-phobicity. Roskilde University in Denmark awarded Peter a Doctor of Science (by thesis) in 2005 as recognition of his scientific efforts. The US Navy and NSF awarded Peter the Antarctic Service Medal for his work in Antarctica.