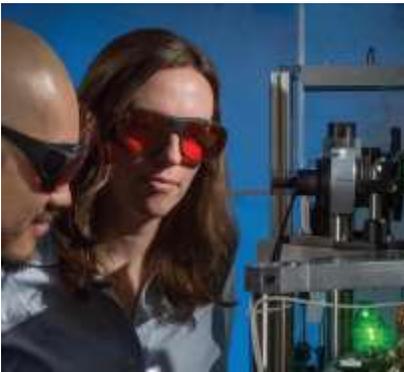


Imaging Spins in Motion

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Dynamic processes in magnetic materials are important from both a fundamental and applied perspective, especially in confined geometries where the structure shape leads to altered spin states and dynamics, including quantization of the spin excitations. Dynamic measurements provide a means to probe the magnitudes of the energies that govern the behaviours of magnetic materials, and are also critical for the development of new paradigms for the transmission and processing of information using magnonics devices. In this talk I will discuss how we can use light to image spin dynamics using a technique known as Brillouin light scattering (BLS), which involves the inelastic scattering of photons from spin excitations known as spin waves or magnons, and I will show several examples of our BLS measurements of spin waves in magnetic thin films and nano-patterned structures. The inelastic light scattering of photons from elastic waves known as phonons was first predicted theoretically almost a century ago and since the first experimental detection of light scattered from phonons in the 1930's, BLS has grown to be an important and versatile tool in solid state physics, especially for the study of magnetic materials.



Bio: Kristen Buchanan is an Associate Professor at CSU. She joined the Department of Physics in 2008. Prior to coming to CSU, she earned a PhD in Physics at the University of Alberta in 2004, for which she received the Governor General's Gold Medal, an award that recognizes the doctoral graduate who achieves the highest academic standing/cumulative scholarly achievement at the University of Alberta, and she worked at Argonne National Laboratory first as a National Science and Engineering Research Council (NSERC) postdoctoral fellow in the Materials Science Division and then as a scientist with the Center for Nanoscale Materials.

She is also the recipient of a DOE Early Career Award. Her research focuses on magnetic materials, particularly magnetic spin textures and spin dynamics in thin films and patterned structures. She is also the faculty advisor to CSU's "Women in Physics" undergraduate student group.