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IMS Rapid Response 2018 * Recipient Guest Seminar



Dr. Judith Driscoll
University of Cambridge

New Concepts for Realising Exemplary Functionalities in Strongly Correlated Oxides

Tuesday, July 31, 2018

2-3pm

Sig Hecker Conference Room (TA-03 Bldg 32 - Room 134)

Abstract: Since the discovery of high temperature superconductivity in perovskite oxides, the unearthing of a huge range of physical phenomena in transition metal oxides (TMOs) has been remarkable, e.g. new magnetics, ferroelectrics, multiferroics, semiconductors, transparent conductors, calorics, plasmonics, catalysts, etc. The link between lattice structure and properties is very strong and anisotropic. This is both a benefit and a drawback. To realise the benefits, the lattice structure must be engineered in a highly controlled way. If this can be done, it provides a tremendous opportunity to dial-in entirely new functionalities. In this talk, I show how to 3D strain engineer thin films to enable such new functionalities to be achieved. I show examples in a range of systems, e.g. higher temperature superconductivity in La_2CuO_4 , practical room temperature-operation magnetoelectrics, higher performance RRAM, and ionic systems that work at much lower temperatures than normal.

Biography: Judith Driscoll is a Professor in the Materials Science dept. at the University of Cambridge. Her research is in the area of electronic oxide thin films. She has been a visitor at Los Alamos National Lab for 15 years. She was a Dee Scholar at the University of Cambridge where she earned her PhD. She was an IBM Fellow for her postdoctoral research at Stanford University and IBM Almaden. She was an associate Prof. at Imperial College from 8 years. She moved to Cambridge in 2003 and is Full Professor there. She is a Fellow of Trinity College and also a Fellow of the Institute of Physics, American Physical Society, the Materials Research Society and the Royal Academy of Engineering. In 2015, she won the Institute of Physics Joule Medal, and the Royal Academy of Engineering Armourers and Brasiers Prize. In 2017, she won the IEEE James Wong award and in 2018 the Kroll Medal from the Institute of Materials. Judith has published nearly 400 research papers which have been cited more than 15,000 times. She has more than 10 patents, several of which have been taken up by industry. She is also Founding Editor (in 2013) of the journal, APL Materials, from the American Institute of Physics.

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To be on Dr. Driscoll's Agenda, to participate in the Early Career Lunch, or for general information contact:
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HOSTED by Dr. Aiping Chen * MPA-CINT