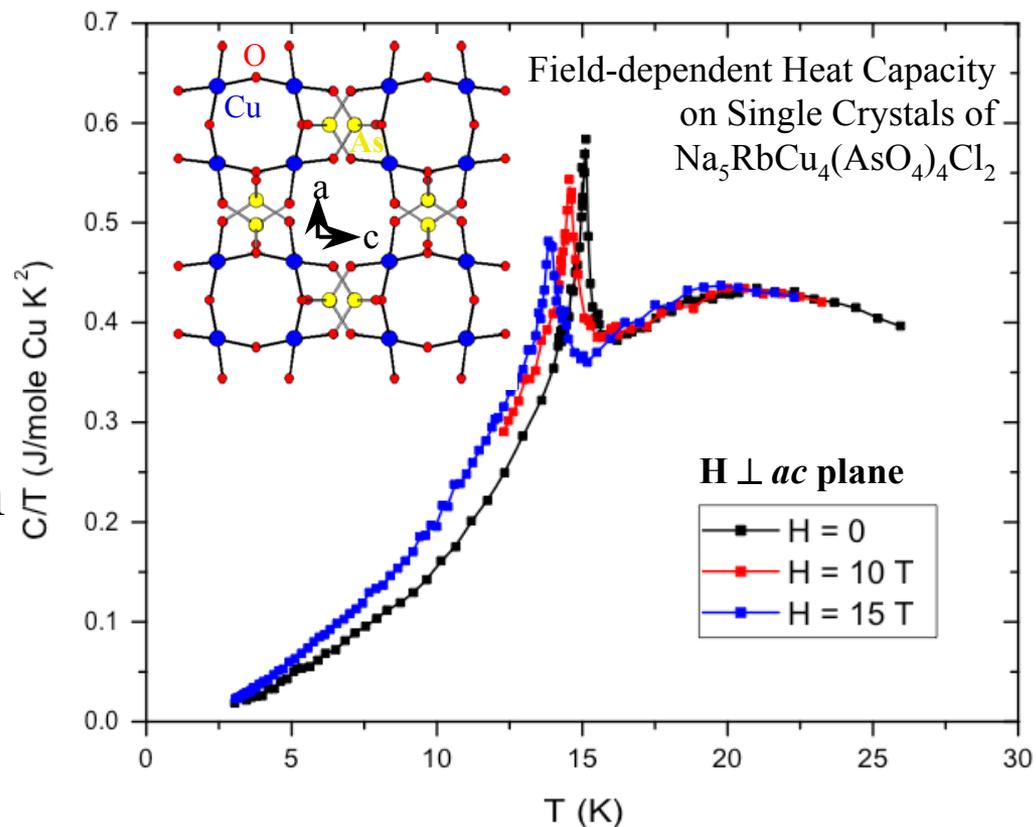


Synthesis and Characterization of Solid Oxides Exhibiting Nanostructured Magnetic Lattices

Shiou-Jyh Hwu, Clemson University, DMR-0322905

Using molten-salt methods, sizable single crystals can be grown for structure/property correlation studies that are pertinent to the investigations of spin coupling behaviors in confined magnetic lattices. In collaborations with R. Stern (Estonia), the field-dependent heat capacity properties, for example, have been investigated at the National High Magnetic Field Lab (NHMFL) in Florida.



The C_p/T shift to lower temperatures coincide with T_N as applied field increases. (Stern *et al.*)

Hwu *et al.* *J. Am. Chem. Soc.* **2002**, *124*, 12404-12405.
Clayhold *et al.* *Phys. Rev. B.* **2002**, *66*, 052403.

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Education:

Four undergraduates (B. Alderman, E. Ferguson, A. Flowers, P. West), seven graduate students (G. Becht, W. Queen, S. Ranmohotti, A. Siegfried, L. Wang, M. Williams, M. Zarzyczny), and one postdoc (X. Mo) have been working in the PI's lab. Three students graduated in 2004 – 2 Ph.D. (X. Mo, S. Taylor) and 1 M.A. (Y. Sun). Two undergraduates continue to pursue their advanced degrees enrolling in the dental school at MUSC (Alderman) and the graduate program at UNC (Ferguson). Flower was a participant of the NSF Summer Research Program in Solid State Chemistry in 2004. Becht, Williams and Zarzyczny were the prior program participants in 2002.

Outreach:



The PI presenting a seminar on “Smart Materials” to local high school students, including the group of Junior Academy of Science students at the Daniel High.

Students experiencing the operation of heat pump made of thermoelectric device



With the PI looking on, students participating in the group effort of unraveling the pre-shaped memory metal.