

Abstract Submitted  
for the DFD09 Meeting of  
The American Physical Society

**Double-diffusive convection in narrow-aspect cylinders – experimental data and CFD simulations**<sup>1</sup> STEPHEN WEBB, Sandia National Laboratories, RENETA DIMITROVA, SUHAS POL, H.J.S. FERNANDO, Arizona State University — An experimental and numerical investigation has been conducted on the evolution of double-diffusive convection in a narrow-aspect cylinder in the diffusive regime in which the cylinder is subjected to bottom and side-wall heating. The laboratory experiments included filling of a narrow aspect ratio tank with linearly stratified salt-water solution. This fluid of known stratification was heated from the side and the bottom to form multiple mixed layers of fluid separated by diffusive interfaces. A micro conductivity and temperature probe was used to obtain the measurements of salinity and temperature and to discern the location of the interfaces. These results are compared to the case of bottom heating only. The numerical simulations have been performed with the FLUENT computational fluid dynamics (CFD) code. Laminar and turbulent simulations have been conducted for one of the experiments. Comparison of laboratory and numerical results shows reasonable agreement.

<sup>1</sup>Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company for the United States Department of Energy National Nuclear Security Administration under contract DE-AC04-94AL85000.

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Date submitted: 06 Aug 2009

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