

Abstract Submitted  
for the MAR05 Meeting of  
The American Physical Society

**Field-Induced ordering in NiCl<sub>2</sub>·4SC(NH<sub>2</sub>)<sub>2</sub>** V.S. ZAPF, D. ZOCCO, M. JAIME, A. LACERDA, National High Magnetic Field Lab, Los Alamos, NM, A. PADUAN-FILHO, Instituto de Fisica, Universidade de Sao Paulo, Brazil — The compound NiCl<sub>2</sub>·4SC(NH<sub>2</sub>)<sub>2</sub> (DTN) is a potential candidate for Bose Einstein Condensation (BEC) of spins. The  $S = 1$  Ni spin triplet ground state is split by the atomic anisotropy into a lower  $S = 0$  state and a higher  $S = \pm 1$  state. Applied magnetic fields parallel to the tetragonal axis reduce the splitting until a level crossing occurs at  $H = 2$  T. Between  $H = 2$  T and  $H = 12$  T, field-induced long range order has been observed below  $T = 1$  K. In other similar compounds, this long range order has been interpreted in terms of a BEC of triplet spins. Unlike many previous BEC candidates, DTN exhibits a strong single axis anisotropy with rotational symmetry in the  $ab$  plane, which allows for the conservation of magnons. We will present the first measurements of specific heat and the magnetocaloric effect of single crystalline DTN in high fields, and investigate the high field phase diagram, long range order, and possible BEC of magnons. This work was supported by the NSF through the National High Magnetic Field Laboratory, the State of Florida and the Department of Energy.

Vivien Zapf  
National High Magnetic Field Lab, Los Alamos National Lab

Date submitted: 21 Dec 2004

Electronic form version 1.4