Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Superconductivity in $MgCNi_3$.Tunneling and heat capacity on single crystals[1] PETER SAMUELY, ZUZANA PRIBULOVA, JOZEF KACMARCIK, PAVOL SZABO, Centre of Low Temperature Physics at the IEP Slovak Academy of Sciences and P.J. Šafárik University, Watsonova 47, 040 01 Košice, Slovakia, CHRISTOPHE MARCENAT, CEA-Grenoble, Département de Recherche Fondamental sur la Matière Condensée, F-38054 Grenoble Cedex 9, France, THIERRY KLEIN, Institut Néel, CNRS, BP166 38042 Grenoble Cedex 9, France, D.-J. JANG, H.-G. LEE, H.-S. LEE, S.I. LEE, NVCRICS and Department of Physics, Pohang University of Science and Technology, Pohang 790-784, Republic of Korea — $MgCNi_3$ reveals superconductivity despite a large molar volume of Ni atoms. The origin of superconductivity in this material has not yet been clarified. There is a lot of discrepancy in experimental results and physical interpretation where even unconventional pairing or a two-band model have been proposed for the system, but these suggestions are based on measurements on polycrystalline samples. Here we present the point-contact tunneling spectroscopy and ac-calorimetry measurements on single crystals of very good quality. Measurements have been performed in the temperature range from 0.7 K and in magnetic fields up to 8 T. The temperature dependence of the energy gap of the system is presented and compared to the BCS model.

[1]This work has been supported by 6th FP EU grant No. MTKD-CT-2005-03002 and the Slovak Research and Development Agency contract No. LPP-0101-06.

Peter Samuely
Centre of Low Temperature Physics at the IEP Slovak Academy of Sciences
and P.J. Šafárik University, Watsonova 47, 040 01 Košice, Slovakia

Date submitted: 29 Nov 2007 Electronic form version 1.4