Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Magnetic field versus temperature phase diagram of the spin-1/2 bond-alternating-chain antiferromagnet F_5PNN YASUO YOSHIDA, Kyushu University; University of Florida, TATSUYA KAWAE, Kyushu University, BOHDAN ANDRAKA, YASUMASA TAKANO, University of Florida, YUKO HOSOKOSHI, Osaka Prefecture University, KATSUYA INOUE, Hiroshima University, NOBUYA MAESHIMA, Tohoku University; Institute for Molecular Science, KOUICHI OKUNISHI, Kanazawa University, KIYOMI OKAMOTO, Tokyo Institute of Technology, TORU SAKAI, Japan Atomic Energy Agency — The S = 1/2 Heisenberg bond-alternating-chain antiferromagnet pentafluorophenyl nitronyl nitroxide (F_5PNN) exhibits Tomonaga-Luttinger-liquid behavior in the temperature dependence of the specific heat above the field-induced magnetic ordering temperature [1]. We have determined the magnetic phase diagram of this compound from the specific heat. For a single crystal, the boundary of the ordered phase in the field-vs-temperature diagram is symmetric with respect to the central field of the gapless region $H_{c1} \leq H \leq H_{c2}$, whereas a distorted phase boundary is observed for a powder sample, whose ordering temperature is reduced. Calculations based on the finite-temperature density-matrix renormalization group suggest the possibility of a novel incommensurate phase due to frustration in the powder, in a narrow field range near the central field. [1]Y. Yoshida *et al.,* Phys. Rev. Lett.**94**, 037203 (2005).

Yasuo Yoshida
Kyushu University; University of Florida

Date submitted: 02 Dec 2007 Electronic form version 1.4