

Cu-NMR Study on Disordered $\text{Sr}_{14}\text{Cu}_{24}\text{O}_{41}$

S. Ohsugi, S. Matsumoto^a, Y. Kitaoka^b, M. Matsuda^c, M. Uehara^d, T. Nagata^e,
and J. Akimitsu^d

Department of Electrical Engineering and Electronics, College of Industrial Technology, Amagasaki,
Hyogo 661-0047, Japan

^a Tsukuba Magnet Laboratory (TML), National Research Institute for Metals (NRIM), Tsukuba,
Ibaraki, 305-0003, Japan

^b Department of Physical Science, Graduate School of Engineering Science, Osaka University,
Toyonaka, Osaka 560-8531, Japan

^c Advanced Science Research Center, Japan Atomic Energy Research Institute, Tokai,
Ibaraki 319-1195, Japan

^d Department of Physics, Aoyama-Gakuin University, Chitosedai, Setagaya-ku, Tokyo 157-8572, Japan

^e Department of Physics, Ochanomizu University, Otsuka 2-1-1, Bunkyo-ku, Tokyo 112-8610, Japan

Reprint requests to Dr. S. O.; Fax: +81 (6) 6431-7244, E-mail: ohsugi@cit.sangitan.ac.jp

Z. Naturforsch. **57a**, 509–512 (2002); received May 25, 2002

*Presented at the XVIth International Symposium on Nuclear Quadrupole Interactions,
Hiroshima, Japan, September 9–14, 2001.*

The ladder-Cu NMR spectrum of a structural disordered single crystal $\text{Sr}_{14}\text{Cu}_{24}\text{O}_{41}$ (Sr14-B) under a magnetic field $H \sim 11$ T gradually splits into two spectra with Curie-like broadening as T decreases from $T_{\text{SP}} \sim 150$ K. Short-range (SR) staggered polarization (SP) on the ladder planes, originating from single-hole localization, occurs. The separation of the Sr14-B spectrum ΔH deviates from the Curie-like T dependence below 20 K. This assures that spontaneous moments appear below $T_{\text{N}} \sim 20$ K in $H \sim 11$ T.

Key words: Spin Ladder; $\text{Sr}_{14}\text{Cu}_{24}\text{O}_{41}$; Cu NMR; Field-induced Long-range Order.