

Abstract Submitted
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Investigation of the Mössbauer spectrum of $\text{RuSr}_2\text{GdCu}_2\text{O}_8$ as a function of Temperature shows that there is only one type Ru site¹ D. COFFEY, Dept. of Physics, Buffalo State College, NY14222, G. HARMON, B. GRAVES, N. MILLER, M. DEMARCO, Dept. of Physics, Buffalo State College, NY 14222, B. DABROWSKI, S. KOLESNIK, M. MAXWELL, Dept. of Physics, Northern Illinois University, Il 60115, S. TOORONGIAN, M. HAKA, Nuclear Medicine Department, SUNY Buffalo, NY 14260 — A sample of $\text{RuSr}_2\text{GdCu}_2\text{O}_8$ was prepared with enriched ^{99}Ru which allows us to study the temperature dependence of the Mössbauer spectrum up 145K. The sample magnetically orders at 138K and has a transition to superconductivity at 8.7K with an onset at $\sim 13\text{K}$. The spectrum at 4.2K was fit with a single-site fit. The hyperfine field is 59.4K with isomer shift which indicates that the charge state of the Ru ion is close to +5. The strength of the electric quadrupole interaction is 0.36 mm/sec with $\eta = 0.2$. This spectrum is essentially identical to that found for a sample prepared with the natural ^{99}Ru abundance. At 146K, above the magnetic transition temperature, the spectrum is fit with a pure electric quadrupole interaction of the same magnitude as at 4.2K with the same isomer shift.

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