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\( \mu \)SR studies of the extended kagome systems \( \text{YBaCo}_4\text{O}_{7+\delta} \) (\( \delta = 0 \) and 0.1) SUHEON LEE, WONJUN LEE, Chung-Ang University, JOHN MITCHELL, Argonne National Laboratory, KWANG-YONG CHOI, Chung-Ang University — We present a \( \mu \)SR study of the extended kagome systems \( \text{YBaCo}_4\text{O}_{7+\delta} \) (\( \delta = 0 \) and 0.1), which are made up of an alternating stacking of triangular and kagome layers. The parent material \( \text{YBaCo}_4\text{O}_{7.0} \) undergoes a structural phase transition at 310 K, releasing geometrical frustration and thereby stabilizing an antiferromagnetically ordered state below \( T_N = 106 \) K. The \( \mu \)SR spectra of \( \text{YBaCo}_4\text{O}_{7.0} \) exhibit the loss of initial asymmetry and the development of a fast relaxation component below \( T_N = 111 \) K. This indicates that the Co spins in the kagome planes remain in an inhomogeneous and dynamically fluctuating state down to 4 K, while the triangular spins order antiferromagnetically below \( T_N \). The nonstoichiometric \( \text{YBaCo}_4\text{O}_{7.1} \) compound with no magnetic ordering exhibits a disparate spin dynamics between the fast cooling (10 K/min) and slow cooling (1 K/min) procedures. While the fast-cooled \( \mu \)SR spectra show a simple exponential decay, the slow-cooled spectra are described with a sum of a simple exponential function and a stretched exponential function. These are in agreements with the occurrence of the phase separation between interstitial oxygen-rich and poor regions in the slow-cooling measurements.

Suheon Lee
Chung-Ang University

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