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Excitation spectrum and magnetic properties of the new Haldane-gap material NENB[1] SERGEI ZVYAGIN, Dresden High Magnetic Field Laboratory (HLD)/Research Center Dresden - Rossendorf (FZD), E. ČIŽMÁR, M. OZEROV, O. IGNATCHIK, T. PAPAGEORGIOU, J. WOSNITZA, HLD/FZD, J. KRZYSTEK, NHMFL/Florida State University, Z. ZHOU, Wayne State University, J.L. WIKAIRA, University of Canterbury, C.P. LANDEE, M.M. THURNBULL, Clark University — Results of high-field ESR and magnetization studies of the new spin-1 Haldane-chain material $[Ni(C_2H_8N_2)_2NO_2](BF_4)$ (NENB) are reported. A definite signature of the Haldane state in NENB was obtained. From the analysis of the frequency-field dependence of magnetic excitations in NENB, the spin-Hamiltonian parameters were calculated, yielding $\Delta/k_B = 17.4$ K, $g_{\|} = 2.14$, $D/k_B = 7.5$ K, and $|E/k_B| = 0.7$ K for the Haldane gap, g factor and the crystal-field anisotropy constants, respectively. The presence of fractional $S = 1/2$ chain-end states, revealed by ESR and magnetization measurements, is found to be responsible for spin-glass freezing effects. In addition, extra states in the excitation spectrum of NENB have been observed in the vicinity of the Haldane gap, which origin is discussed.

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