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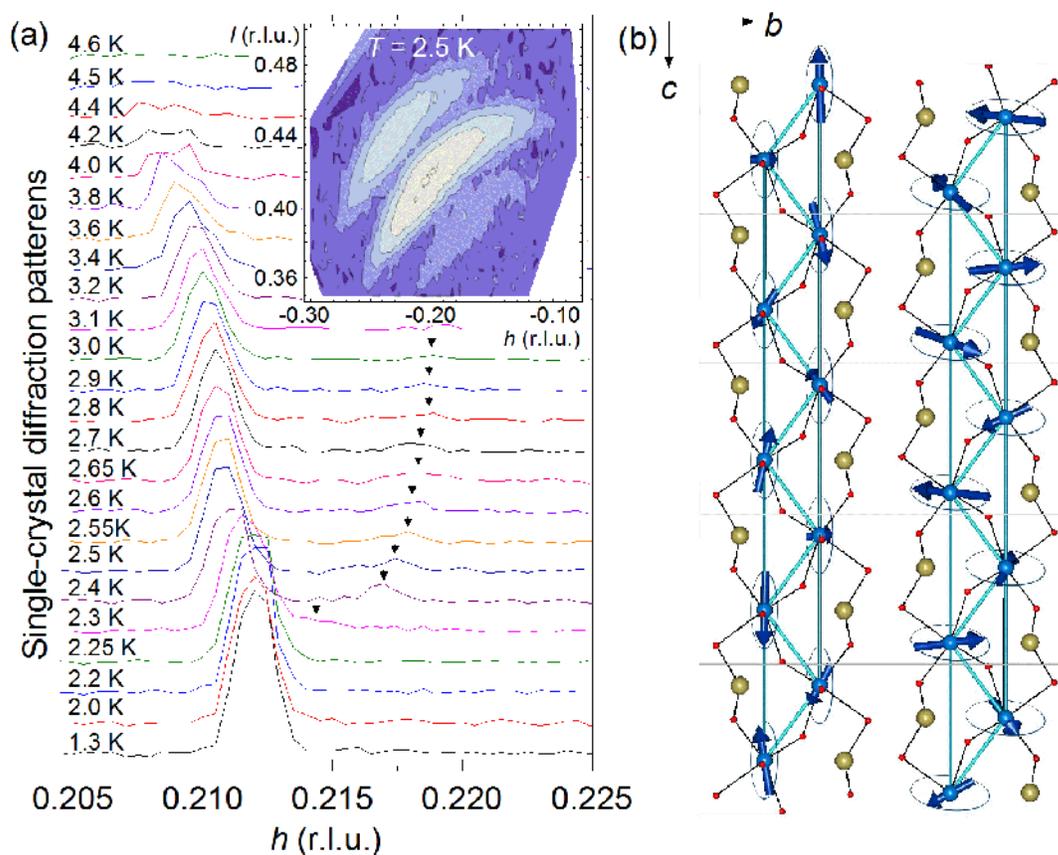
Spin-1/2 frustrated zigzag chain compound beta-TeVO4

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We report on exotic magnetic ordered states and phase diagram of frustrated spin chain compound beta-TeVO4 studied by specific heat, neutron diffraction, and high-field magnetization measurements. This compound, comprising weakly coupled infinite chains of VO5 pyramids sharing corners, is proposed to be a new realization of the zigzag J1-J2 model [1]. In qualitative agreement with this proposal, we found an incommensurate, ICM, magnetic order with $q_1 = (-0.208 \ 0 \ 0.436)$ below $T_N = 4.65$ K and a series of transitions between consecutive ICM magnetic phases, exhibiting pronounced temperature, T , and magnetic field, H , dependences. Of special interest is a long-scale modulated phase with high-order satellite magnetic reflections (fig. 1) that might reflect the formation of magnetic solitons [2] existing in a narrow T, H -range.

[1] Yu. Savina, O. Bludov, V. Pashechenko et al PRB 84, 2011, 104447., [2] H. B. Braun Adv. Phys. 61, 2013, 1.



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