Abstract Submitted
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Magnetic properties of vanadium oxide nanorods, nanotubes and nanourchins.[1] NATASHA CHERNOVA, CHRIS JACOBS, MEGAN ROPPOLO, KRISTIN BUTTERWORTH, CHUNMEI BAN, M. STANLEY WHITTINGHAM, Institute for Materials Research, SUNY Binghamton — Vanadium oxide nanotubes (VONTs) were prepared by hydrothermal method and ion exchanged with BuLi. Vanadium oxide nanorods were synthesized by hydrothermal treatment of electrospun precursors. The compounds were characterized by x-ray diffraction, TGA, TEM, FTIR and magnetic susceptibility techniques. Magnetic properties of VONTs are found to be similar to that reported earlier [1]. Upon ion exchange with BuLi the amount of isolated V^{4+} is preserved, but the spin-gap behavior becomes less pronounced. No hysteresis of magnetization is found as opposed to earlier report [1]. Vanadium oxide nanourchins have similar structure with VONTs; however, their magnetic properties are different. Vanadium oxide nanorods with the structure related to δ-V_4O_{10} show a large spin gap of 560 K. The V^{4+} content is around 0.125 in this compound as follows from the analysis of the spin-gap behavior with the dimer model. [1] L. Krusin-Elbaum, D. M. Newns, H. Zeng, V. Derycke, J. Z. Sun and R. Sandstrom, Nature 431, 627 (2004).

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Natasha Chernova
Institute for Materials Research, SUNY Binghamton

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