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Spin and Orbital Ordering of $Y_{1-x}La_xVO_3$ ($0 \leq x \leq 1$) J.-Q. YAN, Y. REN, J.-S. ZHOU, J.B. GOODENOUGH, Texas Materials Institute, ETC 9.102, The University of Texas at Austin, 1 University Station, C2201, Austin, TX 78712 — At lowest temperatures, $LaVO_3$ exhibits G-type orbital ordering (OO) and C-type spin ordering (SO), while YVO_3 has C-type OO and G-type SO. To study the transition of different ground states with the variation of the size of the A-site cation, single-phase $Y_{1-x}La_xVO_3$ ($0 \leq x \leq 1$) samples were melt-grown with the aid of an image furnace. The structural change accompanying the spin and orbital ordering was studied by high-energy, high-resolution x-ray powder diffraction. The temperature dependence of magnetic susceptibility and thermal conductivity was also studied. The results show that C-type OO is stabilized over a wider temperature range as the La content increases in the compositional range $0 \leq x \leq 0.18$; Too drops from 200 K for YVO_3 to 145 K for $Y_{0.82}La_{0.18}VO_3$, while T_N decreases slightly from 116 K to 112 K. An abrupt change of the ground state from C-type OO to G-type OO was observed at a critical composition $x = 0.20$. At $x \geq 0.20$, all compositions show G-type OO as the ground state and no long-range OO above T_N was observed. *Y. Ren, Experimental Facilities Division, Advanced Photon Source, Argonne National Laboratory, Argonne, IL 60439

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