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Comparative study of Raman excitations in YVOand HoVO BENOIT ROBERGE, SERGE JANDL, Université de Sherbrooke, AGUSTINUS AGUNG NUGROHO, Institut Teknologi Bandung, THOMAS PALSTRA, University of Groningen — First-order Raman scattering and multiphonons are studied in RVO3(R=Ho and Y) as a function of temperature in the orthorhombic and monoclinic phases. Below $T_{OO} = 200$ K in YVO3 and $T_{OO} = 188$ K in HoVO3, a G-type orbital ordering (G-OO) with a concomitant monoclinic transition occurs. The orbital ordering enhances the phonon polarizabilities, it also allows the resolution of room-temperature phonons, and activates new excitations around 700 cm^{-1}. Below $T_N = 114$ K (in both compounds), a C-type magnetic ordering (C-SO) occurs and some phonon frequency softening or frequency hardening are observed. Following the structural (monoclinic to orthorhombic) and spin/orbital rearrangement (C-SO to G-SO and G-OO to C-OO) occuring at $T_{N2} = 77$ K in YVO3 and $T_{N2} = 40$ K in HoVO3, important changes are observed in Raman excitations of both compounds. Even if R ionic radii of HoVO3 and YVO3 are nearly equal ($R_{Ho} = 192$ pm and $R_Y = 190$ pm), we observe some differences that we report.

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