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Discrepancy of structural and electronic transitions in the vicinity of the Metal-Insulator-transition in V_2O_3 HYUN-TAK KIM, ETRI and UST in Korea, JUN-HWAN SHIN, University of Science and Technology, JUNG-YOUNG CHOI, BONG-JUN KIM, ETRI — Vanadium sesquioxide (V_2O_3), representative of strongly correlated electronic system, has been known as undergoing the MIT (Metal-Insulator-Transition) which is between rhombohedral paramagnetic metallic phase and monoclinic antiferromagnetic insulating phase near the transition temperature, (T_c) ≈150 K. In order to reveal a relation between electronic and structural atomic transition, we has measured the temperature dependence of DC conductivity and structural crystallographic characterization with various temperatures from 90 K to 300 K by using low-temperature X-Ray diffraction (LTXRD). The obtained results show a discrepancy of structural and electronic transitions. This discrepancy can be explained by forming of the metallic puddles whose the size and number increased by nucleation and percolation[1,2] during the electronic transition progress from 120 K to 180 K. The puddles have an insulating monoclinic structure before the structural phase transition at ∼185 K. These metallic puddles are induced by the MIT not related to the SPT (structure phase transition). (1. M. M. Qazilbash et al., Science 318, 1750 (2007); 2. B. J. Kim et al., Phys. Rev. B 77, 235401(2008))

Hyun-Tak Kim
ETRI in Korea

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