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**High temperature conductivity measurement of La and Sb doped BaSnO<sub>3</sub> thin films** CHULKWON PARK, USEONG KIM, HYUKWOO KWON, HOONMIN KIM, KOOKRIN CHAR, Department of physics in Seoul National University, MDPL TEAM — We have recently found that doped BaSnO<sub>3</sub> (BSO) system offers great potential for scientific investigations as well as technical applications due to its transparency, high mobility and chemical stability. We investigated the temperature dependent conductivity in two differently n type doped BSO, La doped BaSnO<sub>3</sub> (BLSO) and Sb doped BaSnO<sub>3</sub> (BSSO), at high temperatures in O<sub>2</sub> and Ar atmosphere. Firstly, by switching gas atmosphere, we have measured the diffusion constant of oxygen atoms in BSO thin films from the time dependent conductivity measurement much lower than those of other oxides exhibiting its stable oxygen stoichiometry. Secondly, although both BLSO and BSSO are n typed doped, slight different behavior in temperature dependent conductivity was found; while the BLSO thin films showed expected results that the conductivity decreased as increasing temperature, the BSSO films displayed increasing conductivity as the temperature increased above 500C. In that high temperature region the BLSO and BSSO films also showed different behavior when the gas atmosphere was exchanged between O<sub>2</sub> and Ar. We will present possible explanations for the observation of the different behavior of BLSO and BSSO in high temperature region by taking into consideration the role of the dopant site and threading dislocations in conductivity of BSO system.

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