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P-type K-doping of $BaSnO_3$ and its pn junctions HOONMIN KIM, CHULKWON PARK, USEONG KIM, KOOKRIN CHAR, Department of physics, Seoul National University, MATERIALS & DEVICES PHYSICS LAB. TEAM —
We have recently reported high mobility in La-doped BaSnO3 (BSO), whose transparency and chemical stability promises large potential for scientific and technical applications. The doping possibility with p-type carrier will further enhance its utility in scientific and technical endeavors. For such purpose, we will present our work in p-type doping BSO by epitaxially growing K-doped BSO by pulsed laser ablation on SrTiO3 substrates. We have found that K replaces Ba from EPMA. Although K-doped BSO exhibited rather high resistivity at room temperature, its conductivity increased dramatically at high temperature and the conductivity decreased when small amount of oxygen was removed from the thin films, consistent with the behavior of p-type doped oxides. The carrier type of K-doped BSO will be further confirmed by direct high-temperature Hall measurement. We will report on the mobility of the K-doped BSO and the performance of pn junctions fabricated by using K- and La-doped BSO.

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