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| ΠΑΝΕΠΙΣΤΗΜΙΟ ΑΘΗΝΩΝ**ΤΟΜΕΑΣ ΦΥΣΙΚΗΣ ΣΤΕΡΕΑΣ** **ΚΑΤΑΣΤΑΣΗΣ****ΠΑΝΕΠΙΣΤΗΜΙΟΥΠΟΛΗ, 157 84 ΑΘΗΝΑ** |  |

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**The photocatalytic and ferroelectric properties of SrBi2-xLaxNb2O9 powders**

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**ABSTRACT**

La doping SrBi2-xLaxNb2O9 ferroelectric powders and the ceramics synthesized by the solid state reaction method. It is found that the photocatalysis efficiency is not always correlated to the polarization. As the content of La3+ ions increase, Raman spectra reveals that the La3+ions prefer to occupy the Bi-sites in the Bi2O2 layers at a low doping content and they also replace Sr2+ in the A sites of the perovskite blocks (SrNb2O7) with further increasing La content. The leakage current decreases for the low La content x=0.02, but it increases significantly for higher x. The trend of the photocatalytic efficiency is correlated to the photocurrent and both are increased by the low La-doping of x = 0.02, whereas they are decreased by the heavier doping of La, although the spontaneous polarization increases continuously with the La-doping. It is suggested that the role of the defects such as oxygen vacancy, Sr-vacancy, and various impurity states for the carrier transport plays the more important role than the spontaneous polarization in the heavily La-doped ferroelectric ceramics.

**Keywords:** SrBi2Nb2O9, photocatalysis, spontaneous polarization, photocurrent

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