Supporting Information for:

Enhanced Photocatalytic Activity of La-doped $AgNbO_3$ under Visible Light Irradiation

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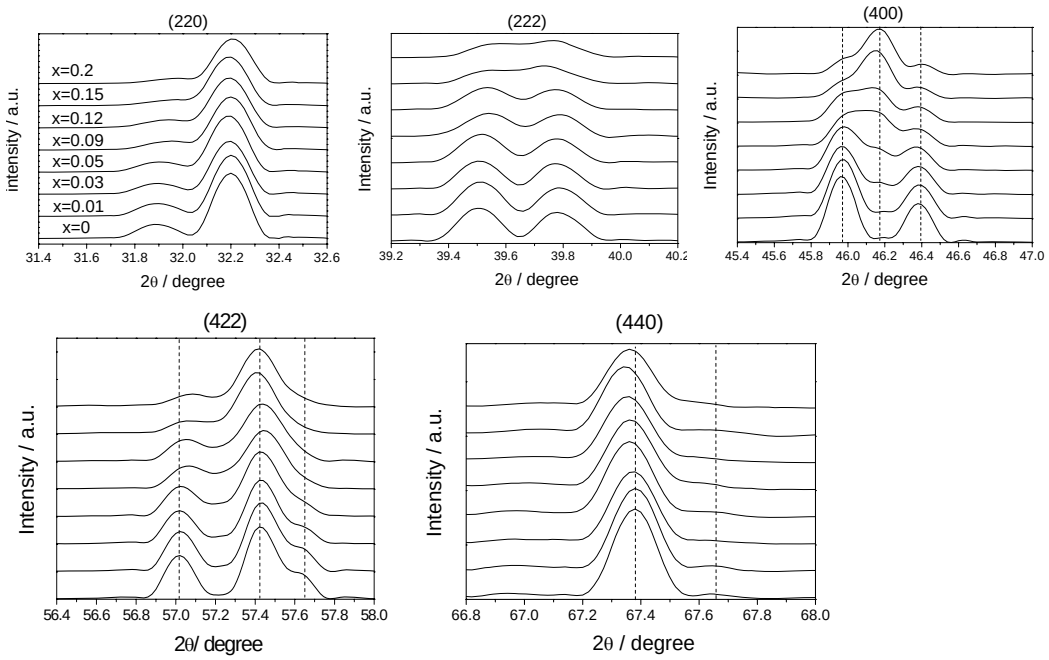

Figure S1. The enlarged view of the XRD patterns.

Table S1. The splitting numbers of the main diffracted lines (pseudocubic doubled perovskite) for different compositions in $Ag_{1-x}La_xNbO_3$ and common tilting systems.

	220	222	400	422	440
$0 \le x \le 0.2$	2	2	3	3	2
Cubic $a^0a^0a^0$	1	1	1	1	1
Tetragonal $a^0a^0c^+$ or $a^0a^0c^-$	2	1	2	2	2
Orthorhombic $a^0b^+c^-$ or $a^+b^+c^-$	2	1	3	3	2
Monoclinic $a^-a^-c^+$	3	2	2	4	3
Monoclinic $a^-b^+c^-$	4	3	2	7	4
Rhombohedral $a^-a^-a^-$	2	2	1	3	2

Figure S1 shows the enlarged views of the main lines of XRD. Also, the relationship between the chemical composition and the numbers of the splitting of main lines were investigated and presented in Table S1. Judging from the numbers of the number of splitting of the main lines [A. M. Glazer, *Acta Crystallogr. Sect. B: Struct. Crystallogr. Cryst. Chem.*, 1972, 28, 3384], all the samples were considered to belong to orthorhombic symmetry. For (400), the relative intensity of the splitting peaks is different in each sample. This is possibly caused by the different atomic scattering factors due to the different amount of La doping in the sample.

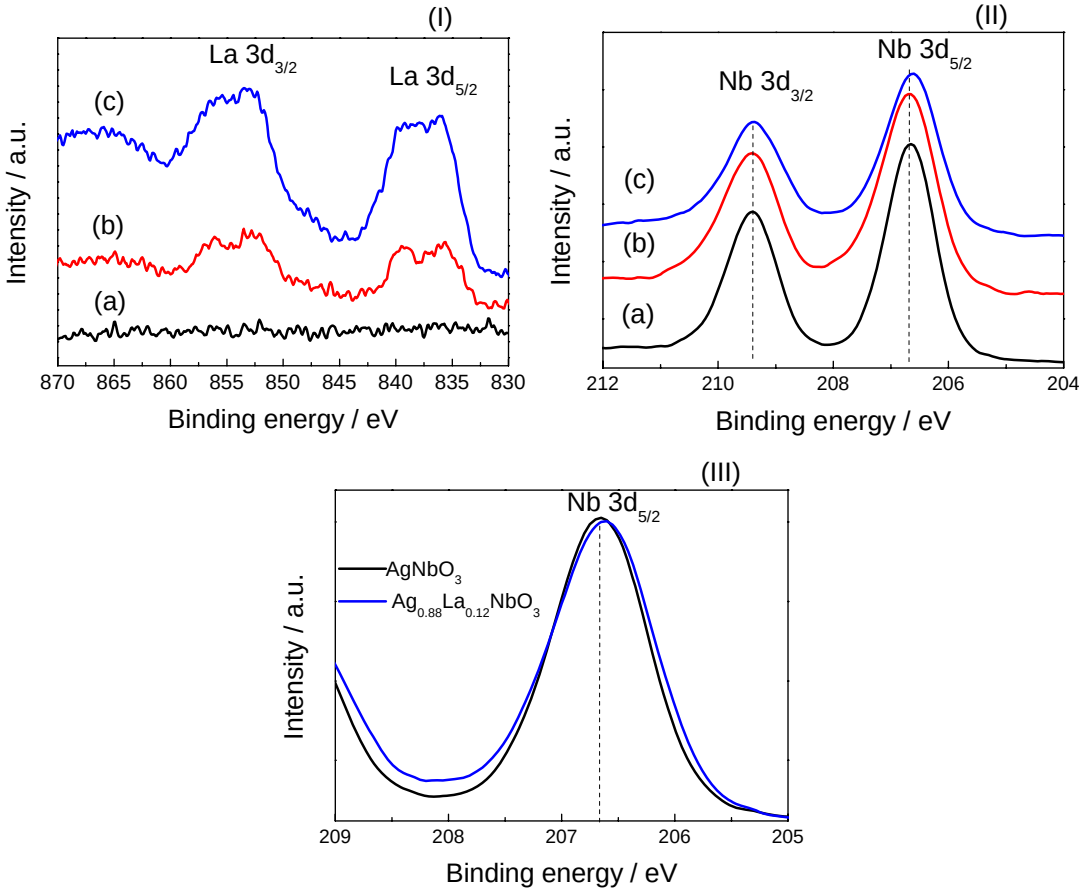

Figure S2. The XPS spectra of (I) La 3d, and (II) Nb 3d obtained from (a) $AgNbO_3$, (b) $Ag_{0.97}La_{0.03}NbO_3$, (c) $Ag_{0.88}La_{0.12}NbO_3$; and the enlarged view of (III) Nb $3d_{5/2}$ lines of $AgNbO_3$ and $Ag_{0.88}La_{0.12}NbO_3$. The XPS spectra were obtained using a Thermo ESCALAB 250 physical electronics photoelectron spectrometer with monochromatized Al Kα X-ray radiation (1486.6 eV). The energy resolution of the electrons analyzed by the hemi-spherical mirror analyzer is about 0.05 eV. The binding energy was determined by reference to the C 1s line at 284.8 eV.

The peak of $Ag_{0.88}La_{0.12}NbO_3$ is slightly broadened and has a slight shift to the lower binding energy in comparison with that of $AgNbO_3$. These results imply that small amount of Nb are possibly reduced by La doping because the binding energy of Nb^{4+} is lower than that of Nb^{5+}.

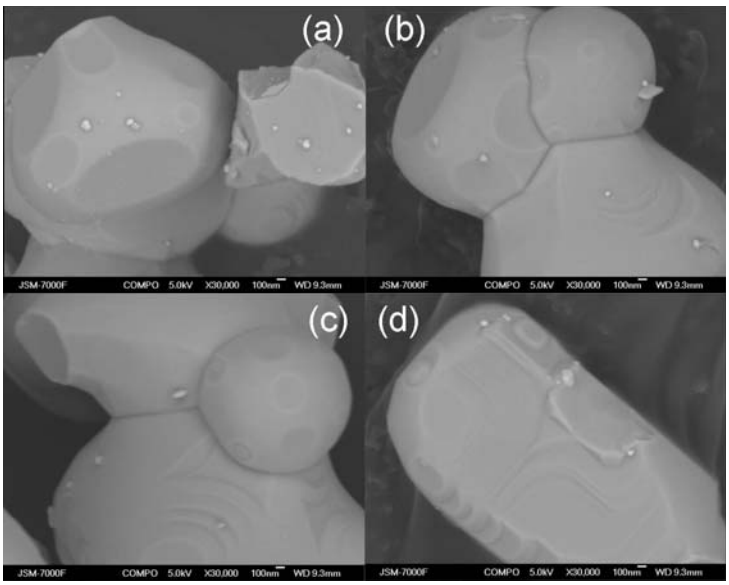

Figure S3. Backscatter SEM images of $AgxNbO_3$ (x=1.0, 1.01, 1.03 and 1.06) (from a to d).

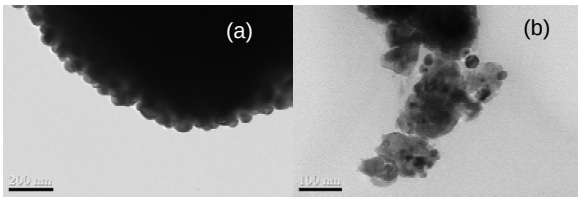

Figure S4. TEM images of $AgNbO_3$ (a) and $Ag_{0.88}La_{0.12}NbO_3$(b).