Electronic Supplementary Material (ESI) for RSC Advances.

Effect of samarium and vanadium co-doping on structure, ferroelectric and photocatalytic properties of bismuth titanate

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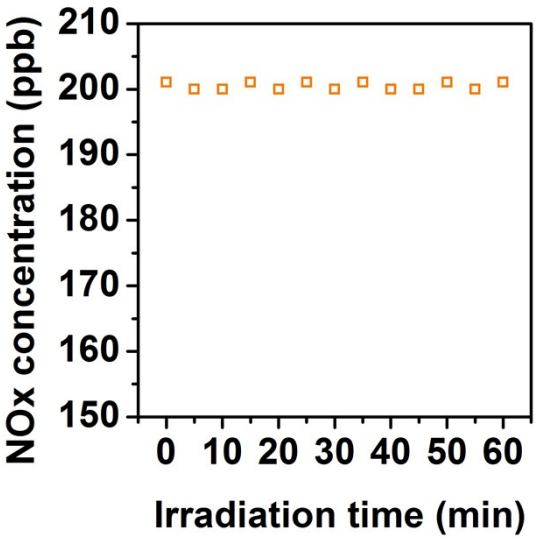
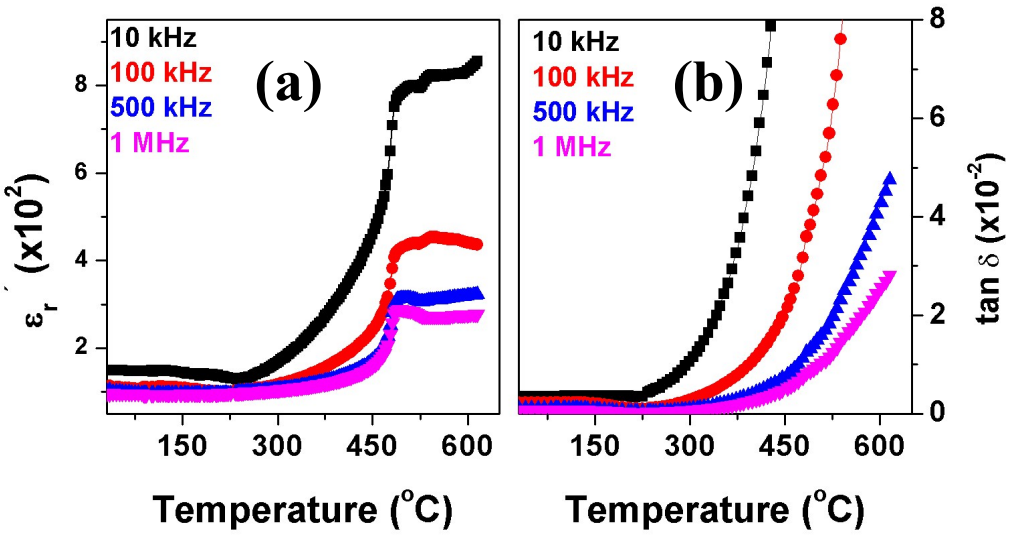
Fig. S1: Photolysis test, with the solar lamp on, and no photocatalyst into the reactor.



As it is shown in fig. S1, the effect of photolysis to the photocatalytic activity, after 60 min irradiation time, is negligible.

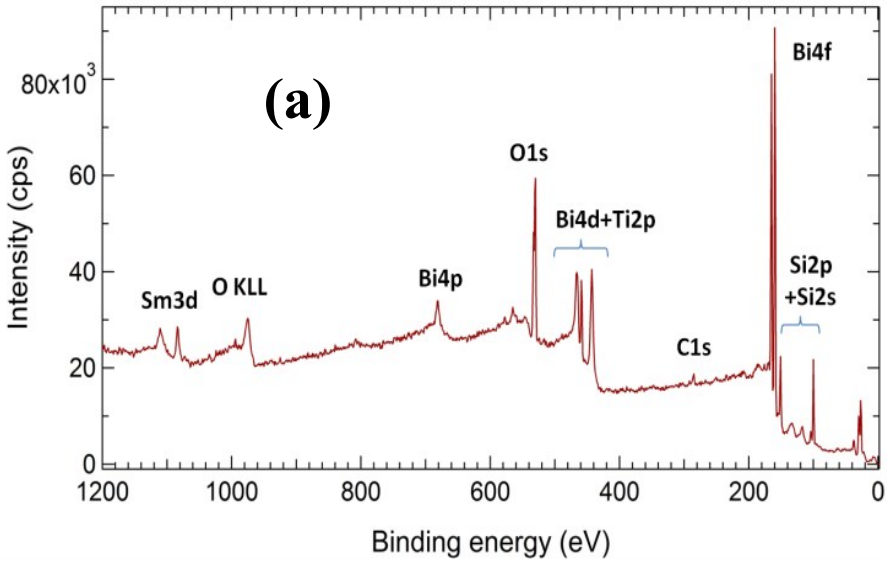
Fig. S 2: Dielectric constant and loss of SBVT measured as a function of temperature.

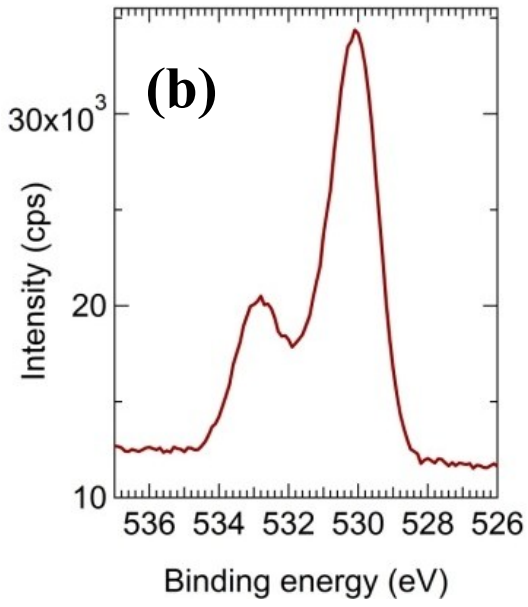


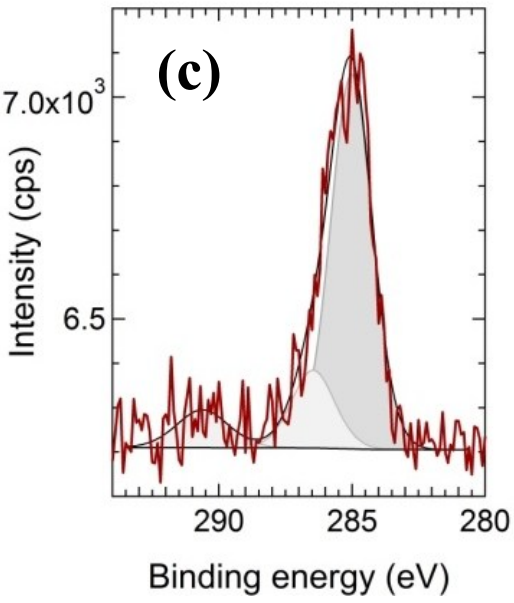
Temperature dependent dielectric constant (ε_r') and tan δ measured at 10 kHz, 100 kHz, 500 kHz and 1 MHz. The arrow in tan δ indicates the phase transition temperature.

Fig. S 3: Wide scan, O1s and C1s

The survey XPS spectra (fig. S2 a) shows the expected elements besides two extra silicon peaks, Si 2p and Si 2s, coming from the Si wafer used for the XPS measurements. The intensity of the Vanadium peaks is too low, due to its small concentration in the sample, and cannot be seen in the wide scan spectra. A small C 1s signal, related to the typical carbon adventitious contamination, is also detected.

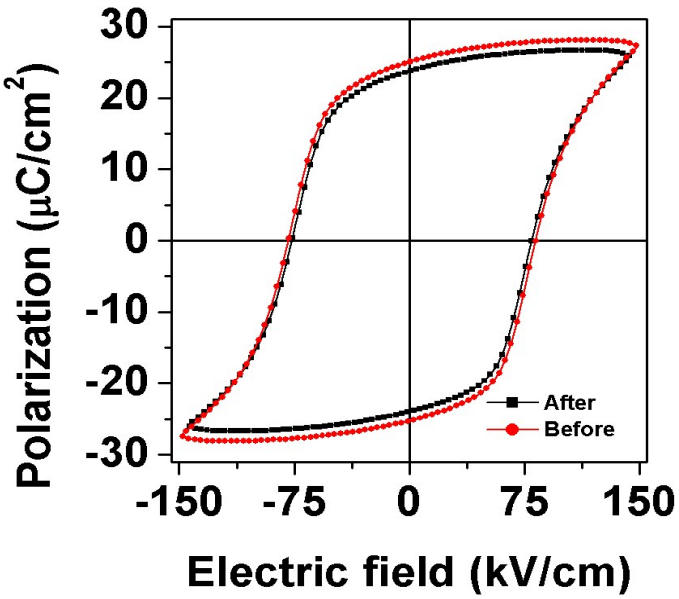






The O 1s region shows a main feature centered at 530.1 eV (fig. S2 b), assigned to the oxide from the SBVT compound. The smaller component at higher BE (fig. S2 c) is attributed to oxygen atoms in SiO_2, the native oxide on Si wafers, and adsorbed surface species, such as hydroxyl groups and CO like species.

Fig. S4 Fatigue resistance up to 10^8 cycles



Polarization – electric field hysteresis loops measured before and after 10^8 switching cycles.