

Strong Intermixing Effects of $\text{LFO}_{1-x}/\text{STO}_x$ Toward the Development of Efficient Photoanodes for Photoelectrocatalytic Applications

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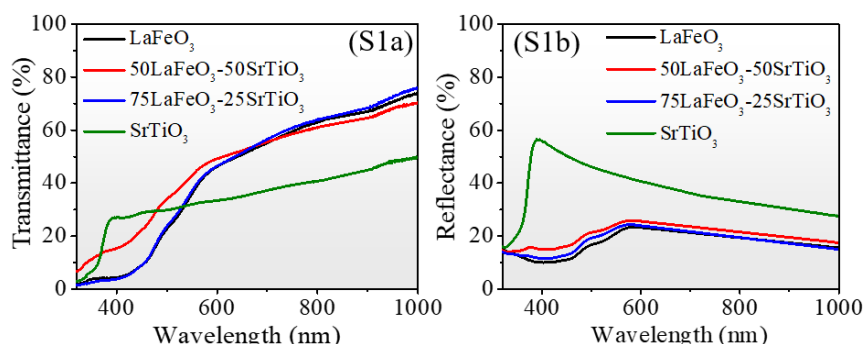


Figure S1: Optical properties of $\text{LFO}_{1-x}/\text{STO}_x$ films: (a) transmittance, (b) reflectance

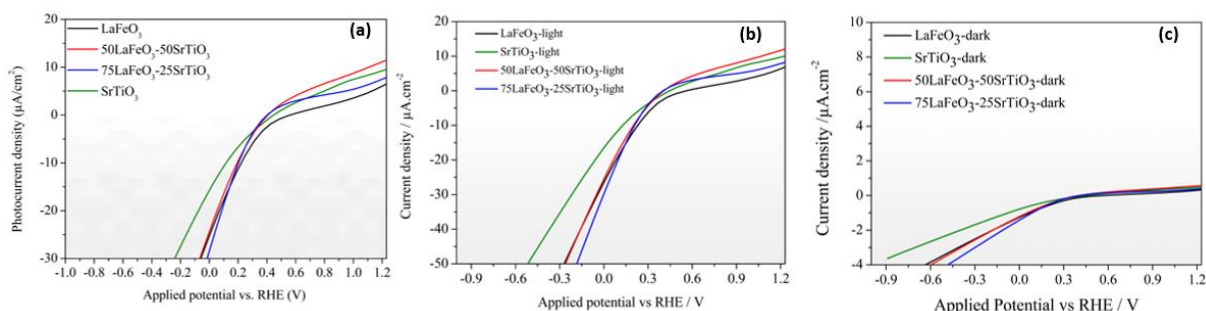


Figure S2: Photoelectrochemical measurements: (a) photocurrent density versus potential, (b) current density under illumination versus potential, (c) current density in the dark versus potential

As can be seen in Figure 7a (e.g. the manuscript) and Figure S2, negative photocurrent values were measured for voltages 0-0.2 V vs RHE for LaFeO_3 -based compounds. Our results are similar to those reported previously [1,2]. These authors attributed this phenomenon to the co-existence of both photoanodic and photocathodic behavior in the antiferroic LaFeO_3 -based compounds and in the multiferroic BiFeO_3 -based compounds [3]. It has be noted that this behavior is not related to photocorrosion, generally appearing at 0.6 V vs RHE and leading to a drop in photocurrent intensity as

observed in both steady state photocurrent and transient current e.g. figure 7 (b) and (c) measured at fixed 0.6 V vs RHE for LaFeO₃-based compounds. This was confirmed by the unchanged measured photocurrent for SrTiO₃ compound (green curve in figure 7 (b) and (c)). Similar behavior was also detected in our previous works on BiFeO₃-based compounds [4,5].

Table S1: Element content quantification measured by EDS-SEM of all samples studies.

Sample/elements	O	Ti	Sr	La	Fe
STO	68.18	15.94	15.88	----	----
LFO	53.26	----	----	24.32	22.42
STO _{0.25} LFO _{0.75}	57.78	5.50	5.80	15.75	15.17
STO _{0.5} LFO _{0.5}	66.68	8.63	9.46	7.59	7.64

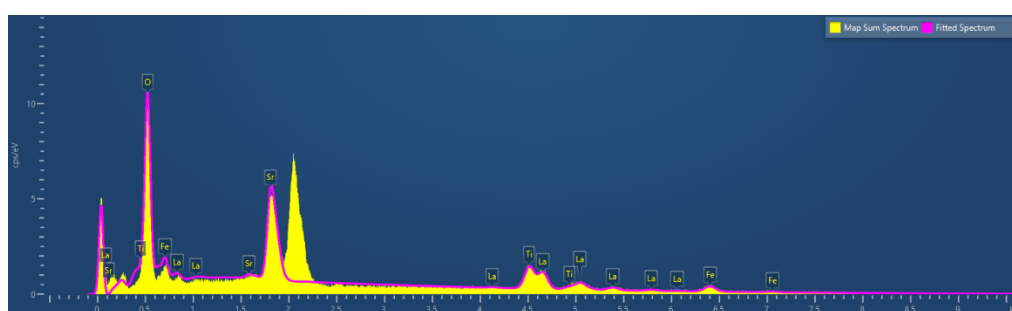


Figure S3: Typical EDS spectrum recorded in STO_{0.5} LF_{0.5} sample.

References

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