Supplementary Information (SI) for RSC Advances.

Development of sphere-shaped bimetallic $Ti_{0.5}Sr_{0.5}O_3$ as an efficient bifunctional electrocatalyst for overall water splitting performance in alkaline media

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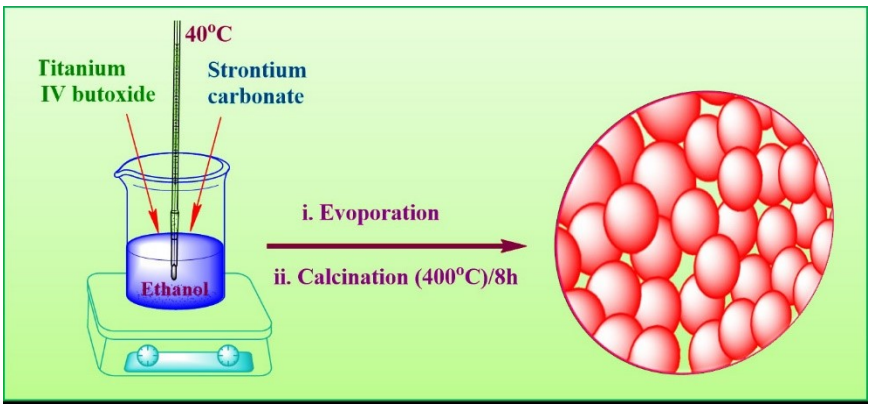


1. Synthesis of $Ti_{0.5}Sr_{0.5}O_3$

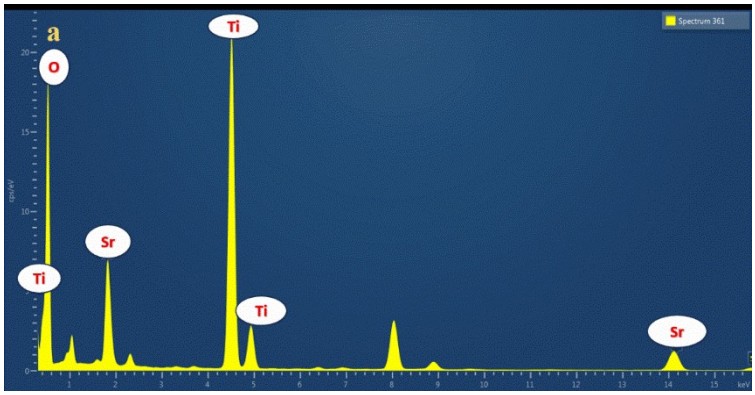


Figure S1. Schematic representation of the synthesis of $Ti_{0.5}Sr_{0.5}O_3$

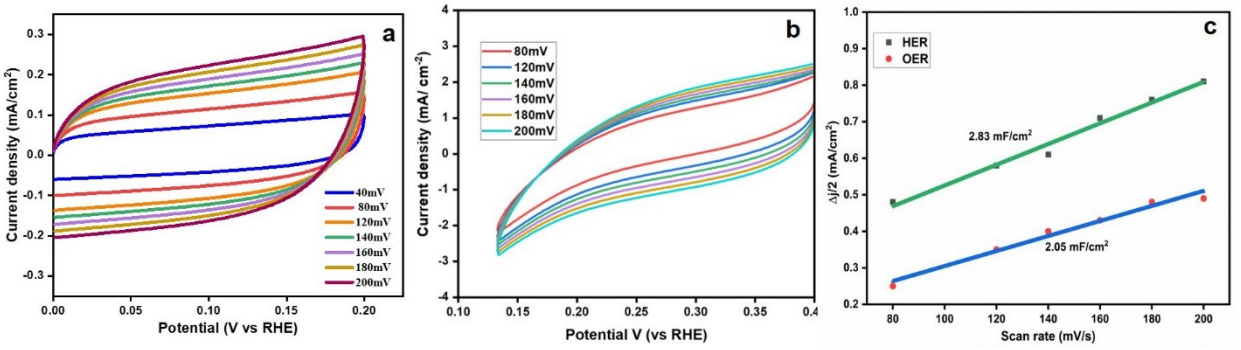
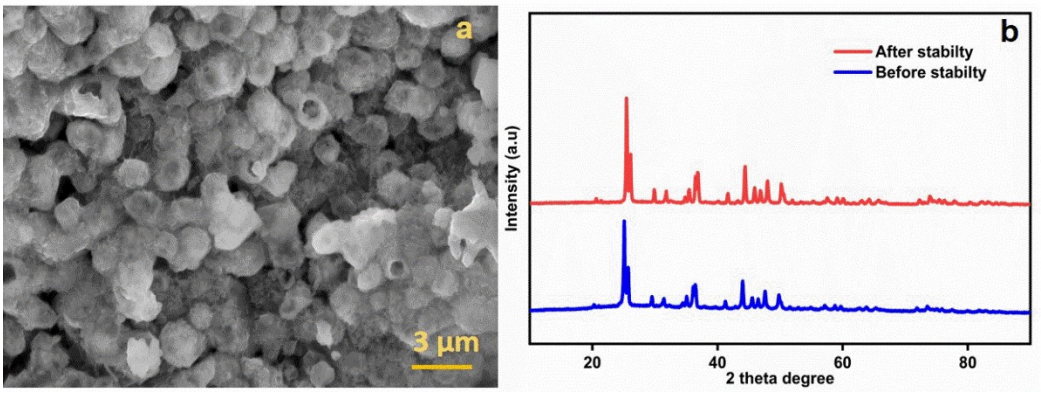


Figure S2 EDAX profile for $Ti_{0.5}Sr_{0.5}O_3$

Figure S3 (a) ECSA profile at various scan rates for OER in non-faradic region; (b) ECSA profile at various scan rates for HER in non-faradic region; (c) Cdl plot for $Ti_{0.5}Sr_{0.5}O_3$/NF



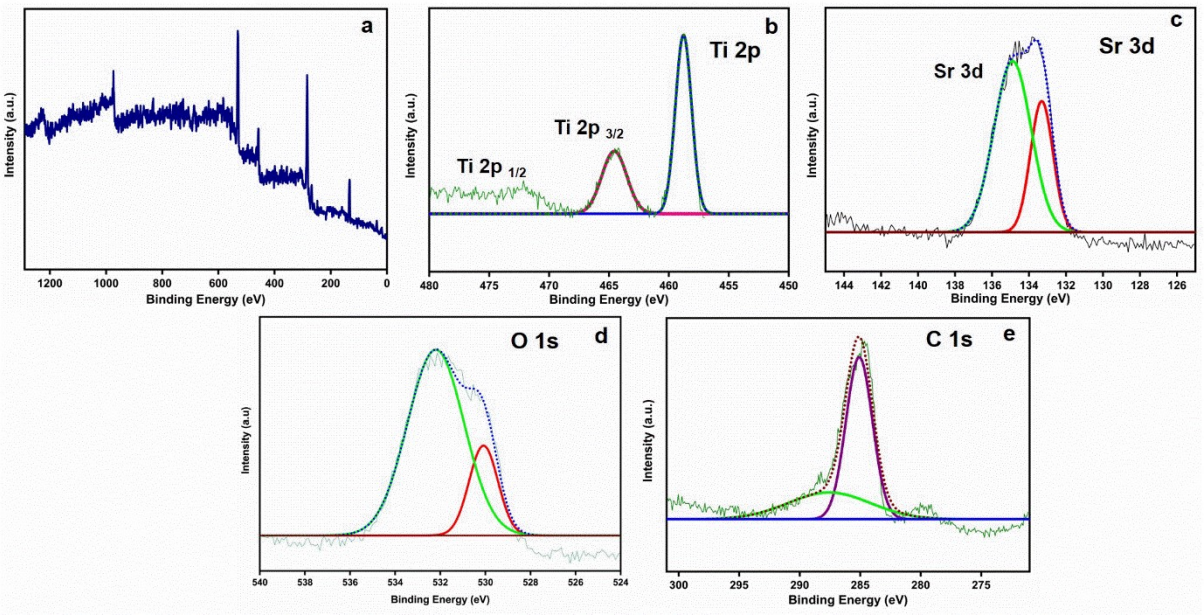


Figure S4 (a) SEM image; (b) XRD spectra of $Ti_{0.5}Sr_{0.5}O_3$/NF measured after long-term stability.

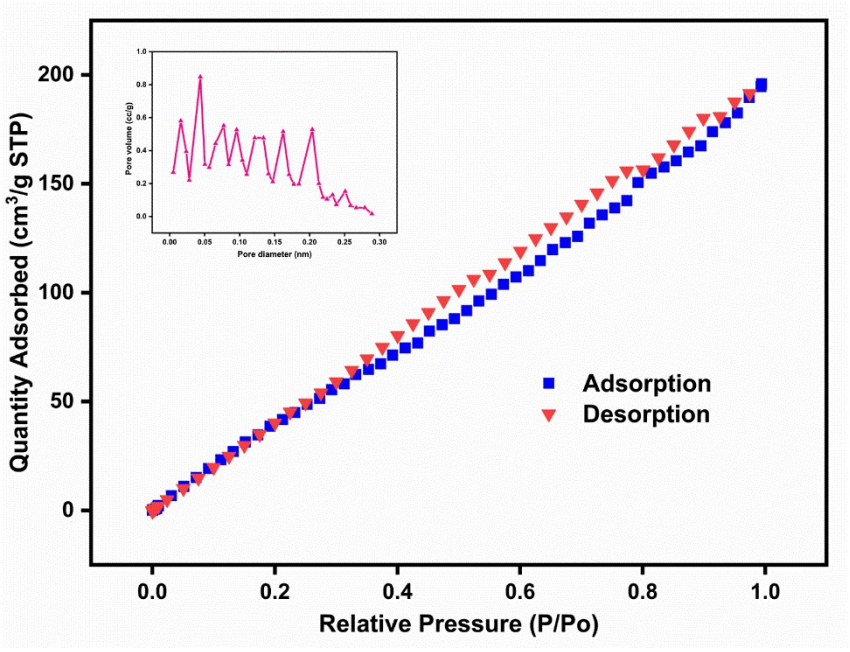


Figure S5 XPS spectra; (a) XPS full survey spectra of $Ti_{0.5}Sr_{0.5}O_3$; (b) Ti 2p, (c)Sr 3d, (d) O 1s, and (e) C 1s

Figure S6 N_2 adsorption−desorption isotherms of $Ti_{0.5}Sr_{0.5}O_3$ (insets: corresponding pore size distribution).

Table S1: Comparison Table of the performance of $Ti_{0.5}Sr_{0.5}O_3$ **with recently reported catalysts.**

S. No	Electrocatalyst	Reaction	Overpotential	Tafel slope	Electrolyte	References
1	CoO_x-TiO_2	OER	350	65	1.0 M KOH	[1]
2	CoS_2-TiO_2	HER/OER	198/231	61/92	1.0 M KOH	[2]
3	FeTiO3	OER	220	155V	1.0 M KOH	[3]
4	Ni/TiO2	HER	46	41.8	1.0 M KOH	[4]
5	$NiCo_2O_4$/TiO_2	HER/OER	185/309	120/55	1.0 M KOH	[5]
6	$Ti_{0.5}Sr_{0.5}O_3$	HER/OER	101.6/299	179/152.5	1.0 M KOH	[THIS WORK]

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