

Electronic Supplementary Material

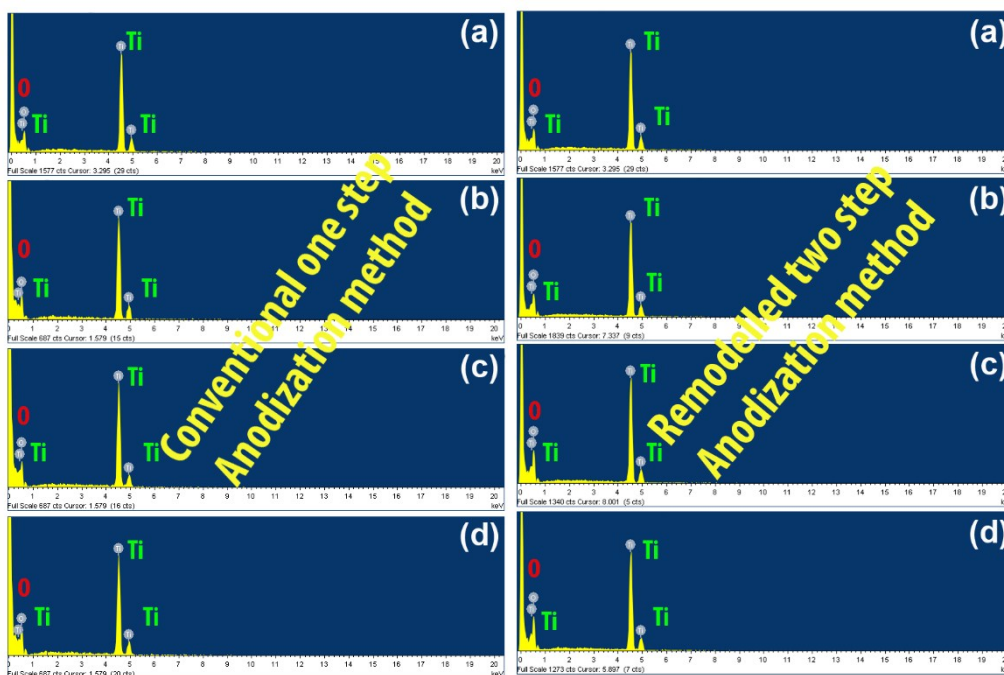


Fig. ES1 EDAX spectra of Titania nanotubes anodized by two different methods at anodizing voltage of (a) 30V (b) 40V (c) 50V and (d) 60V respectively

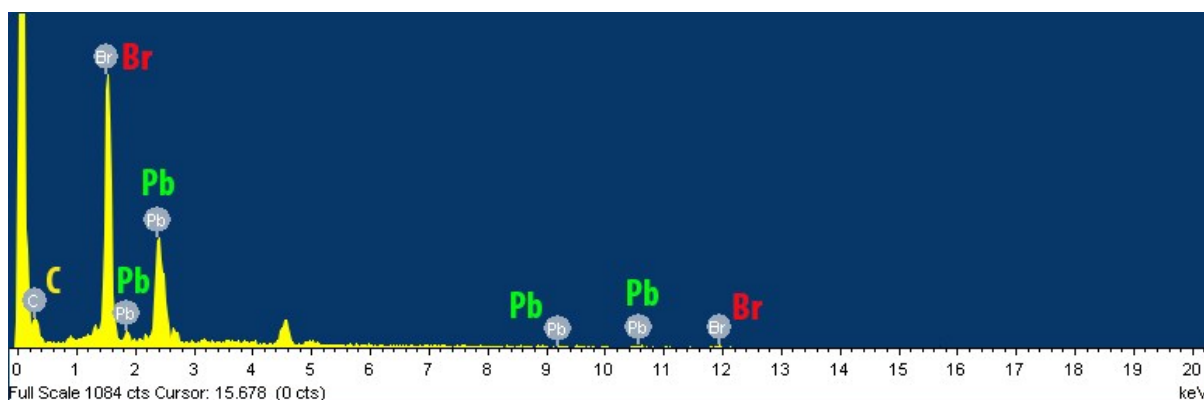


Fig. ES2 EDAX micrograph of $\text{CH}_3\text{NH}_3\text{PbBr}_3$ perovskite thin film prepared by two-step sequential deposition method

Table ES1 The Average Length and Diameter of TiO₂ samples anodised at various anodising voltages using the conventional one step and remodelled two step method

Conventional 1 Step Anodization		
Anodising Voltage	Dimensions of the grown nanotubes	
	Tube Diameter	Tube Length
30V	81nm	1.63µm
40V	146nm	2.41µm
50V	160nm	3.07µm
60V	200nm	7.8µm
Modified 2 Step Anodization		
Anodising Voltage	Dimensions of the grown nanotubes	
	Tube Diameter	Tube Length
30V	90nm	1.75µm
40V	150nm	2.7µm
50V	173nm	3.55µm
60V	210nm	9.4µm

Table ES2 Photovoltaic performance parameters of Perovskite Solar Cells based on different Titania nanotube length measured under AM 1.5 sunlight illumination

Anodization Method	Tube Length (μm)	J_{sc} (mA/cm^2)	V_{oc} (mV)	FF	η (%)
One Step	1.63	2.39	711	0.63	1.07
	2.41	4.3	718	0.57	1.76
	3.07	6.49	751	0.54	2.63
	7.8	7.49	759	0.54	3.07
Two Step	1.75	3.89	709	0.62	1.62
	2.7	5.21	724	0.59	2.22
	3.55	6.78	758	0.53	2.72
	9.4	8.27	747	0.59	3.64