Supporting Information

Exploring the interplay of the water-methanol solvent admixture on the optoelectronic properties of spray pyrolyzed fluorine-doped tin oxide thin films and their potential use in solar cell fabrication

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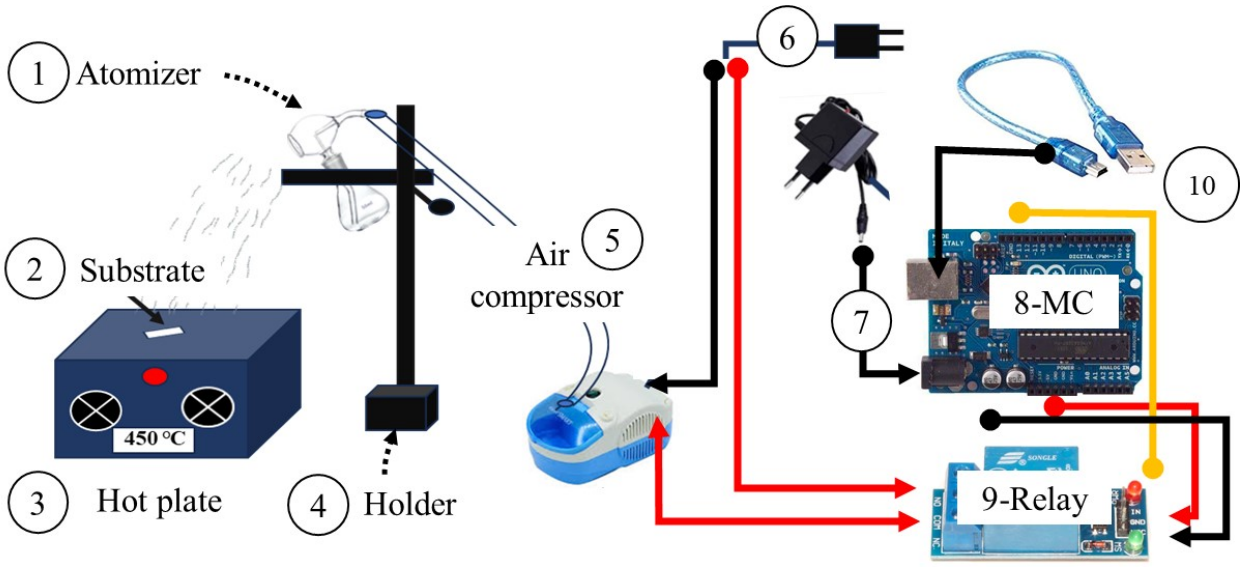
Note: Musarrat Zahra and Muhammad Saifullah have contributed equally in this work.

Supporting information



S1:Assembly of spray pyrolysis setup employed for the fabrication of FTO thin film samples; **1:** chromatography atomizer for producing a fine mist of precursor salts solution, **2:** SLG substrate for the fabrication of FTO thin film, **3:** hot plate to maintain the temperature of 450 °C to ensure pyrolysis reaction), **4:** holder for adjusting atomizer at a particular angle, **5:** air compressor for compressed air supply to the atomizer to producing fine mist, **6:** power supply AC power supply to run an air compressor, **7:** DC supply to operate the microcontroller, 8: programmable microcontroller, **9:**relay (programmed switch to regulate the power supply to the compressor), and **10:**data cable for feeding a particular program from computer to MC.

Table S1**:** Texture coefficient values of M0, M25, M50, M75, and M90 along (200), (101), (211), and (110) planes.

Sample	**TC $_{(200)}$**	**TC $_{(101)}$**	**TC $_{(211)}$**	**TC $_{(110)}$**
M0	0.58	1.09	0.84	1.47
M25	0.80	0.95	0.75	1.85
M50	0.75	0.90	0.48	1.87
M75	1.78	1.27	0.10	0.55
M90	2.61	0.86	0.31	0.21

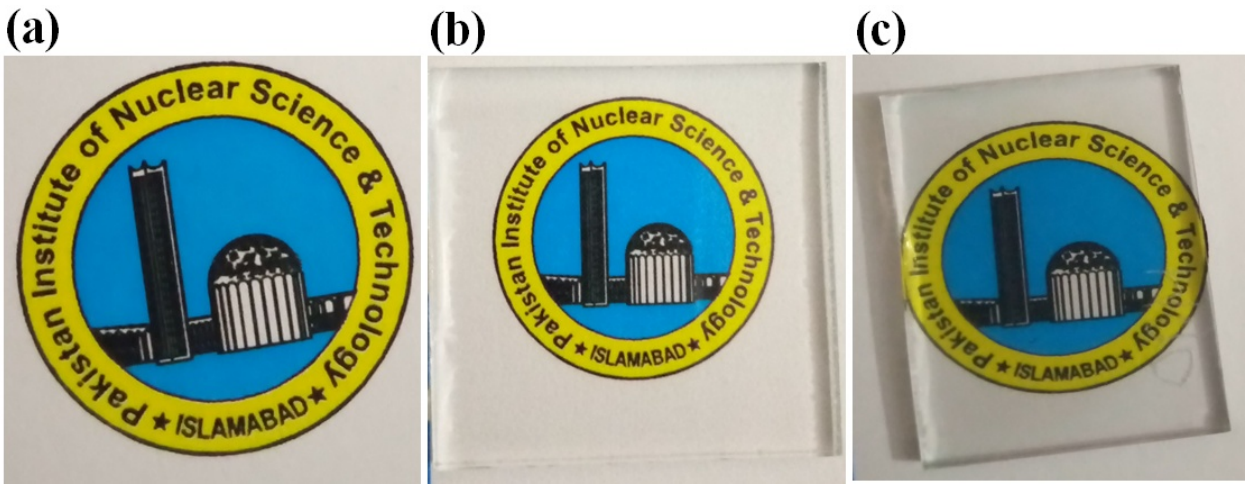


Fig. S2: (a) Monogram seen by the bare eye, (b) visible through the uncoated glass substrate, and (c) visible through M90.

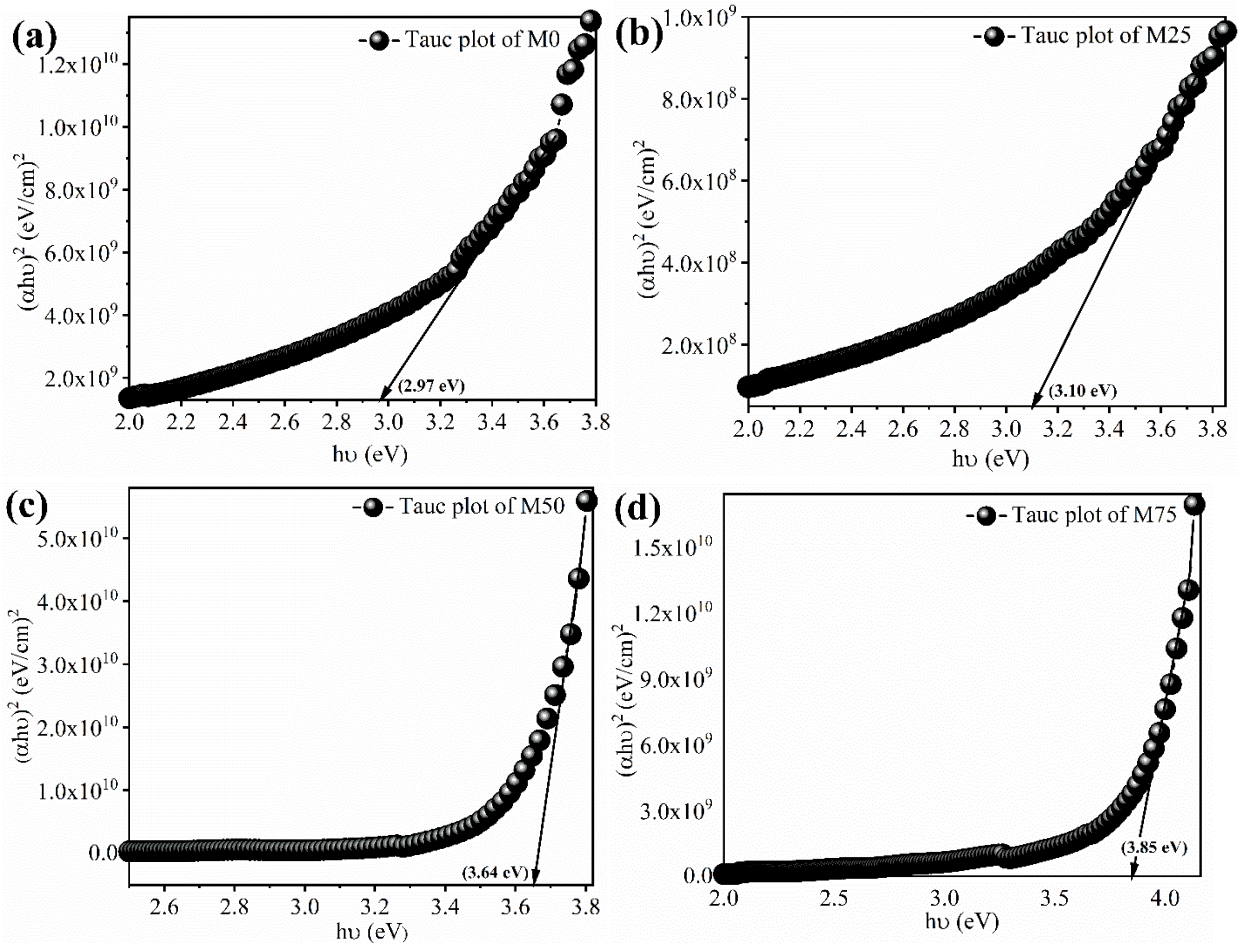


Fig. S3: Taucplots of (a) M0, (b) M25, (c) M50, and (d) M75 to determine their band gaps.

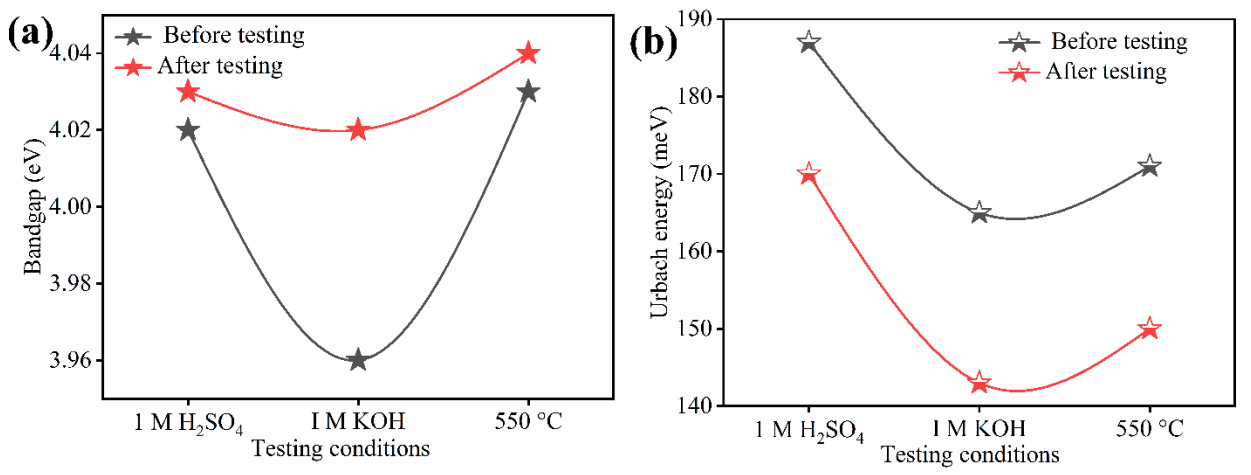


Fig. S4: (a) Bandgap and (b) Urbach energy variation before and after exposing M90 to 1 M H_2SO_4, 1 M KOH, and 550 ℃ testing conditions.