Supporting Information (SI)

Perforated $BaSnO_3$ Nanorods Exhibiting Enhanced Efficiency in Dye Sensitized Solar Cells

Anurag Roy[£,†], Partha Pratim Das[£,§] Prabhakaran Selvaraj[†], Senthilarasu Sundaram[†]* and Parukuttyamma Sujatha Devi[£]*

[£]Sensor and Actuator Division, CSIR-Central Glass and Ceramic Research Institute, 196, Raja S.C. Mullick Road, Kolkata-700032, India.
[§]Presently at: Crystallographic Lab, Department of Earth System Sciences, Yonsei University, Yonseiro 50, Seoul 03722, Korea.
[†]Environment and Sustainability Institute, University of Exeter, Penryn, Cornwall TR10 9FE, United Kingdom.
Corresponding Author
*Tel.: +91-33-2483-8082, +44 (0) 1326 259486
*E-mail: psujathadevi@cgcri.res.in, psujathadevi@gmail.com, s.sundaram@exeter.ac.uk

There are total 4 (four) pages, 3 (three) figures and 3 (three) tables in the supporting information.

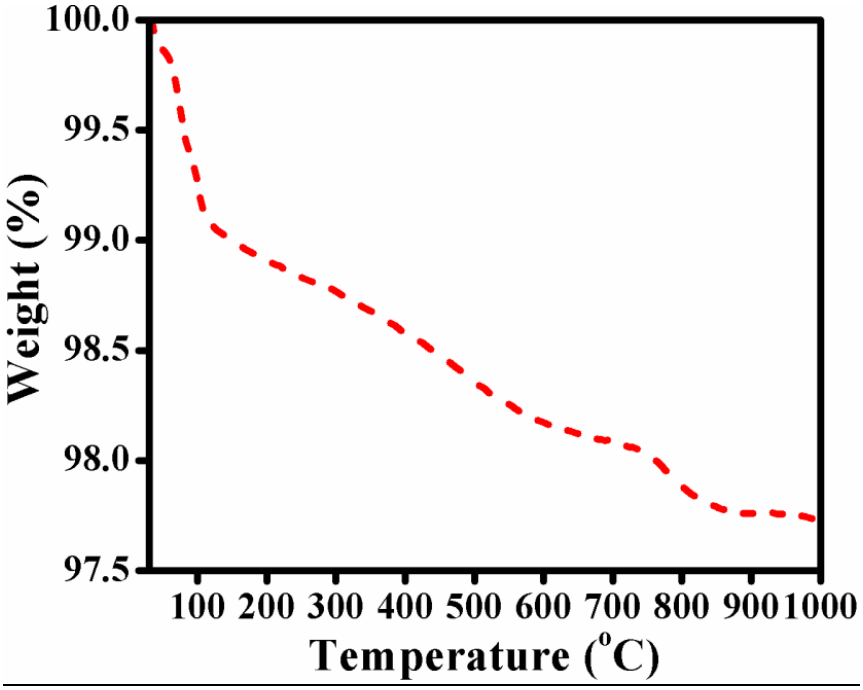

Figure S1. TG-curve of as prepared dextran gel to prepare $BaSnO_3$

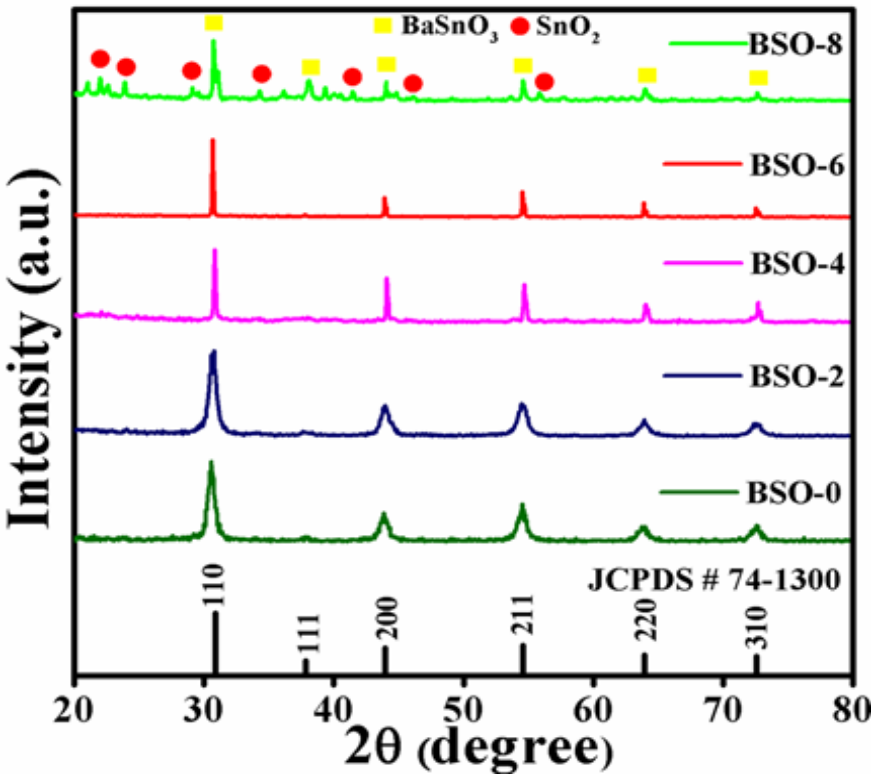

Figure S2. X-ray diffraction pattern of $BaSnO_3$ upon variation of dextran addition along with the standard JCPDS data.

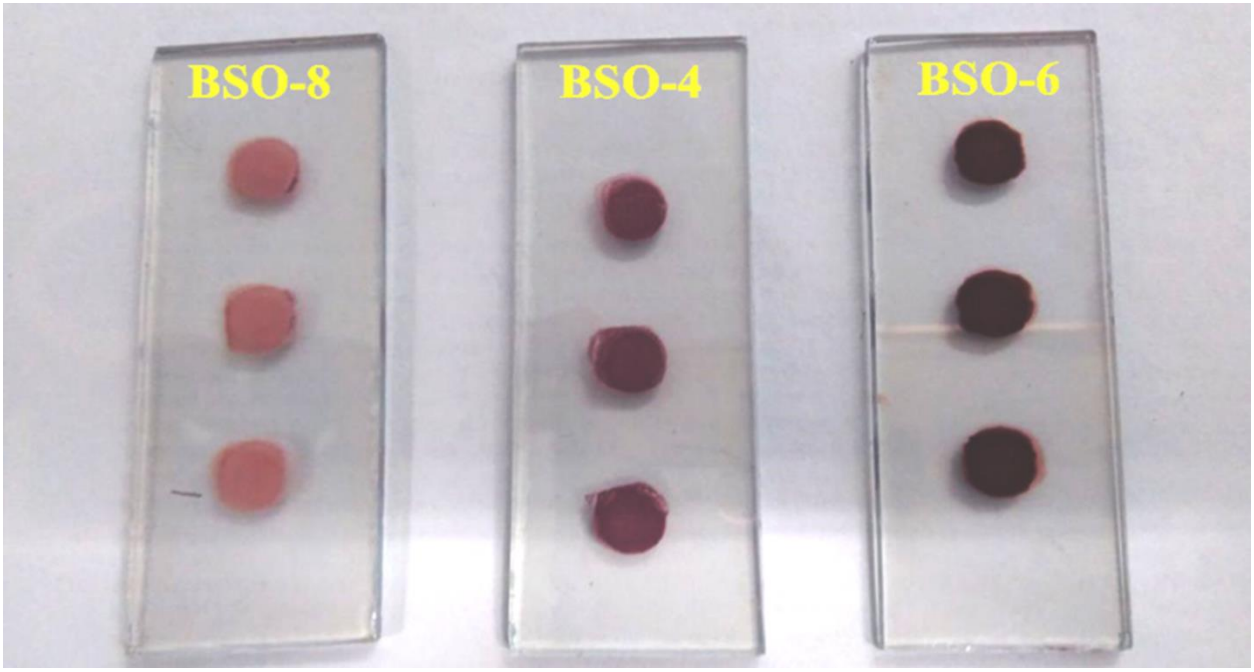

Figure S3. Digital Image of the N719 dye sensitized tested films of (a) BSO8, (b) BSO4 and (c) BSO6 samples.

Table S1. Comparative study of surface characteristics and dye loading properties for different BSO morphologies

Sample	Surface Area (m^2/g)	Average Pore Diameter (nm)	Dye Loading Capacity ($\mu M/cm^2$)	No. of Dye molecule attached	Zeta Potential (mV)
BSO4	**19.7**	**12**	**64.08**	**$4.21x10^{16}$**	**14**
BSO6	**27.5**	**3.8**	**72.92**	**$5.62x10^{16}$**	**25**
BSO8	**3.73**	**22**	**51.28**	**$3.32x10^{16}$**	**3**

Table S2. Photovoltaic performance of thickness depended BSO6 films

No. of Layer	Average Thickness (μm)	J_{SC} ±0.1 (mA/cm^2)	V_{OC} (V)	FF	Efficiency (%) ± 0.2
1	2.23	2.32	0.740	0.55	0.944
2	5.56	6.83	0.779	0.55	2.943
3	8.51	8.11	0.824	0.64	4.312
4	11.22	8.29	0.849	0.58	4.087

Table S3. Comparative results of short circuit current density (J_{SC}) and corresponding efficiency recorded from IPCE and *J-V* measurement techniques by keeping same values of FF and V_{OC} as recorded for *J-V* measurement for all the devices

Devices	IPCE measurement		*J-V* measurement	
	J_{SC}(mA/cm^2)±0.1	Efficiency (%)	J_{SC} (mA/cm^2)	Efficiency (%)
BSO6	7.61	4.01	8.11	4.31
BSO6A	13.13	5.59	14.75	5.99
BSO6B	15.72	6.38	16.81	6.86