

## **Supplementary Information**

### **Chemically Exfoliated Nanosilicate Platelets Hybridized Polymer Electrolytes for Solid State Dye Sensitized Solar Cells**

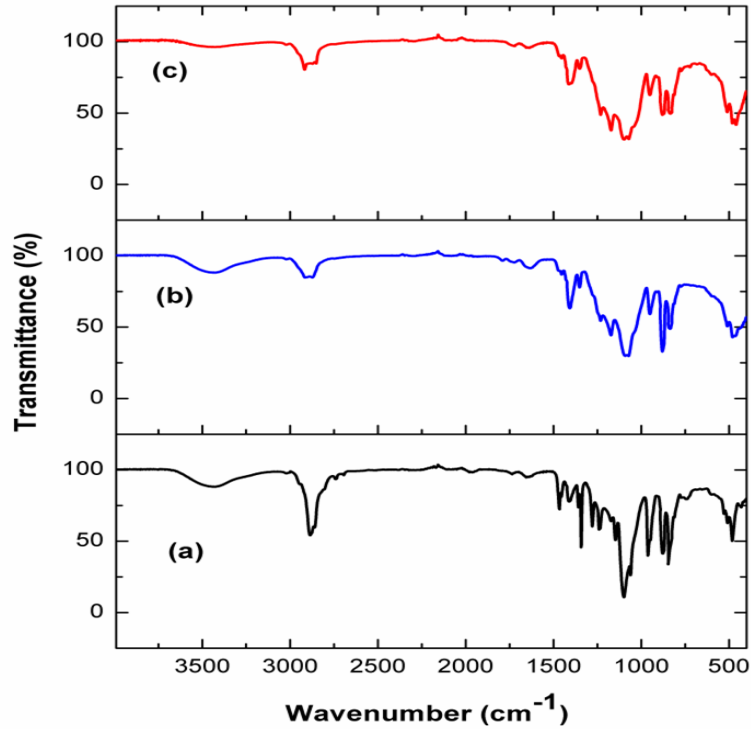
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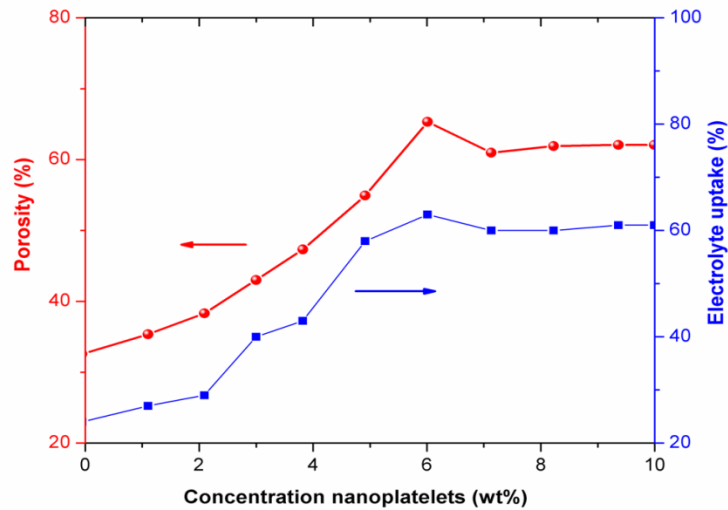
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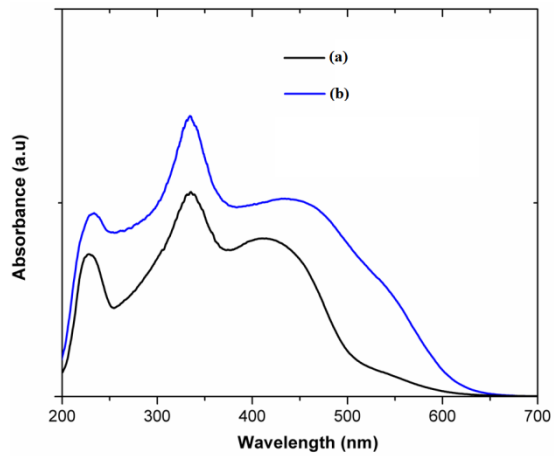
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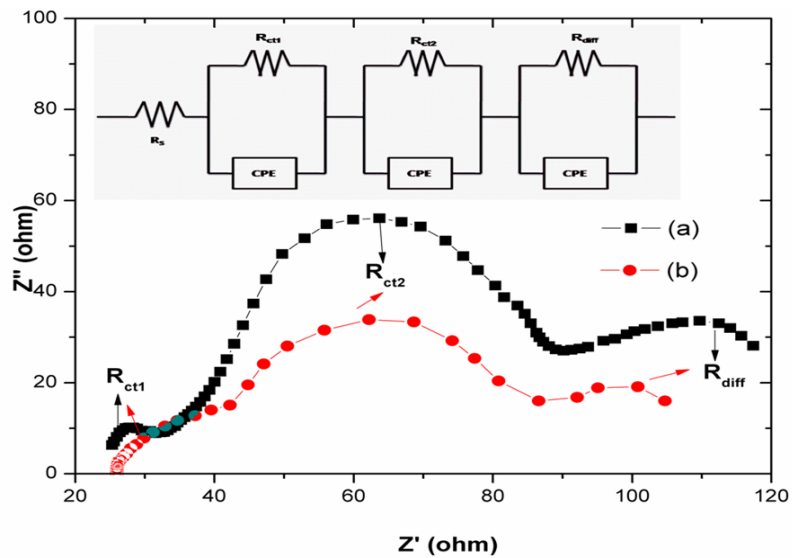
**Fig. s1<sup>†</sup>** FTIR spectra of (a) PEO/PVdF-HFP, (b) PEO/PVdF-HFP/MMT and (c) PEO/PVdF-HFP/e-MMT composite membranes



**Fig. s2<sup>†</sup>** Porosity and electrolyte uptake of PEO/PVdF-HFP as a function of exfoliate MMT nanoplatelets (e-MMT)



**Fig. s3<sup>†</sup>** UV-Vis absorption spectra of PEO/PVDF-HFP composite electrolyte membranes (a) with pristine MMT and (b) exfoliated MMT



**Fig.s4<sup>†</sup>** The EIS of the DSSCs based on PEO/PVDF-HFP electrolytes with (a) NaMMT and (b) PEO/PVdF-HFP/e-MMT under the illuminations of  $100 \text{ mW cm}^{-2}$

**Table s1<sup>†</sup> Thermal parameters derived from DSC**

Polymer composite	Crystallinity (%) (PEO)	$T_g$ °C	$\Delta H_{m1}$ J/g	$\Delta H_{m2}$ J/g
PEO/PVDF-HFP	21.10	-22.5	45.91	27.12
PEO/PVDF-HFP/pristine MMT (NaMMT)	16.5	-23.4	35.26	24.33
PEO/PVDF-HFP/exfoliated MMT platelets	15.6	-25.7	33.48	23.72

**Table s2<sup>†</sup> EIS parameter of DSSC 100 mW/cm<sup>2</sup> illumination**

Electrolyte	With NaMMT nanoplatelets (un modified)	With eMMT nanoplatelets (Exfoliated/ Modified)
$R_{ct1}/ \Omega$	12.4	14.2
$R_{ct2}/ \Omega$	42.0	40.8
$R_{diff}/ \Omega$	30.7	20.0