

## SUPPORTING INFORMATION

### **Structure-thermal and water vapor permeability barrier properties relationship of poly(butylene succinate)/organomodified beidellite clay bionanocomposites prepared by *in-situ* polycondensation**

Mohamed Ilsouk,<sup>ab</sup> Mustapha Raihane,<sup>\*a</sup> Benaissa Rhouta,<sup>a</sup> Remo Merijs Meri,<sup>c</sup> Janis Zicans,<sup>c</sup> Jana Vecstaudža,<sup>d</sup> Mohammed Lahcini<sup>\*ab</sup>

<sup>a</sup> IMED-Lab, Faculty of Sciences and Techniques, Cadi-Ayyad University, Av. Abdelkrim Khattabi, BP 549, 40000 Marrakech, Morocco

<sup>b</sup> Mohammed VI Polytechnic University, Lot 660, Hay Moulay Rachid, 43150 Ben Guerir, Morocco

<sup>c</sup> Institute of Polymer Materials, Riga Technical University, Paula Valdena St 3/7, Riga, LV-1048, Latvia

<sup>d</sup> Rudolfs Cimdins Riga Biomaterials Innovations and Development Centre, Riga Technical University, Institute of General Chemical Engineering, Faculty of Materials Science and Applied Chemistry, Pulka 3, Riga, LV-1007, Latvia

\* Corresponding authors: M. Raihane (Email address: [m.raihane@uca.ma](mailto:m.raihane@uca.ma))  
M. Lahcini (Email address: [m.lahcini@uca.ac.ma](mailto:m.lahcini@uca.ac.ma))

**Table: 01**

**Figure: 01**

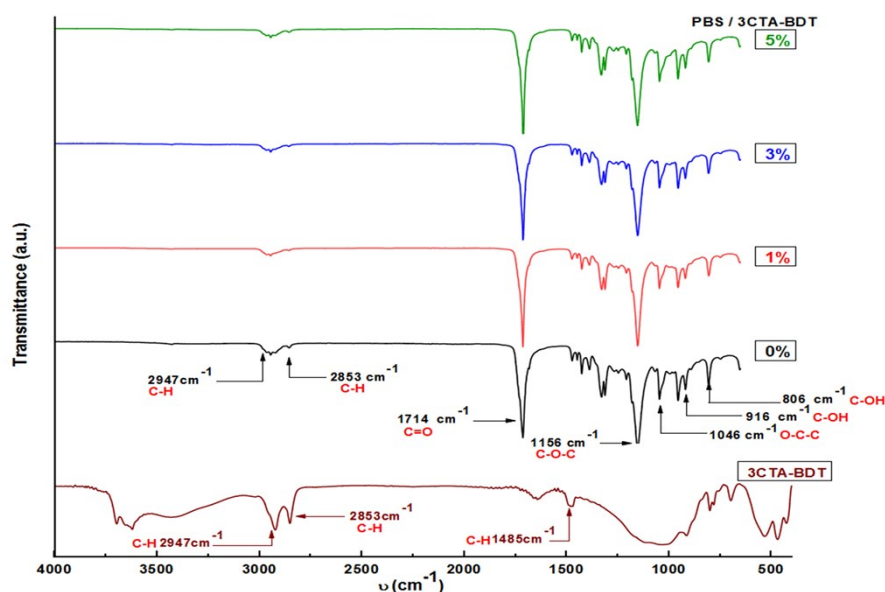
**Table S1.** Compositions of the compounds for the preparation of PBS/3CTA-BDT nanocomposites

Samples <sup>a</sup>	1,4-BD		SuAh		BiCl <sub>3</sub> <sup>b</sup>		3CTA-BDT <sup>c</sup>
	(mmol)	(g)	(mmol)	(g)	(mmol)	(g)	(g)
PBS pure	60	5.4	60	6.0	0.120	0.038	0.000
PBS/ 1% 3CTAB-BDT	60	5.4	60	6.0	0.120	0.038	0.114
PBS/ 3% 3CTAB-BDT	60	5.4	60	6.0	0.120	0.038	0.342
PBS/ 5% 3CTAB-BDT	60	5.4	60	6.0	0.120	0.038	0.570

<sup>a</sup>) *In situ* polycondensation

<sup>b</sup>) [1,4-BD+SuAh]/ [BiCl<sub>3</sub>]/ = 1000/1]: 1,4-BD (1,4-butanediol) and SuAh (Succinic anhydride)

<sup>c</sup>)  $y \% = \frac{m_{3CTA-BDT}}{m_{1,4-BD} + m_{SuAh}} \times 100$  ( $m_{3CTA-BDT}$ ,  $m_{1,4-BD}$  and  $m_{SuAh}$  represent the initial weight of 3CTA-BDT, and introduced 1,4-BD and SuAh, respectively.



**Fig. S1** FTIR spectra of 3CTA-BDT, pure PBS and its nanocomposites with different organoclay loadings.