

# Polymer Blends Based on 1-Hexadecyl-3-Methyl Imidazolium 1,3-Dimethyl 5-Sulfoisophthalate Ionic Liquid: Thermo-Mechanical, Surface Morphology and Antibacterial Properties

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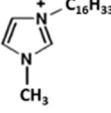
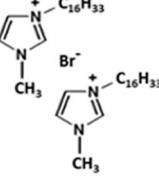
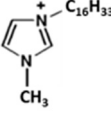
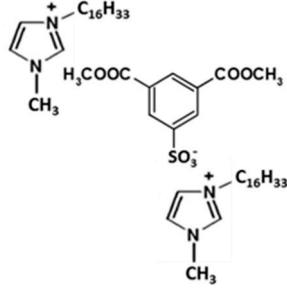
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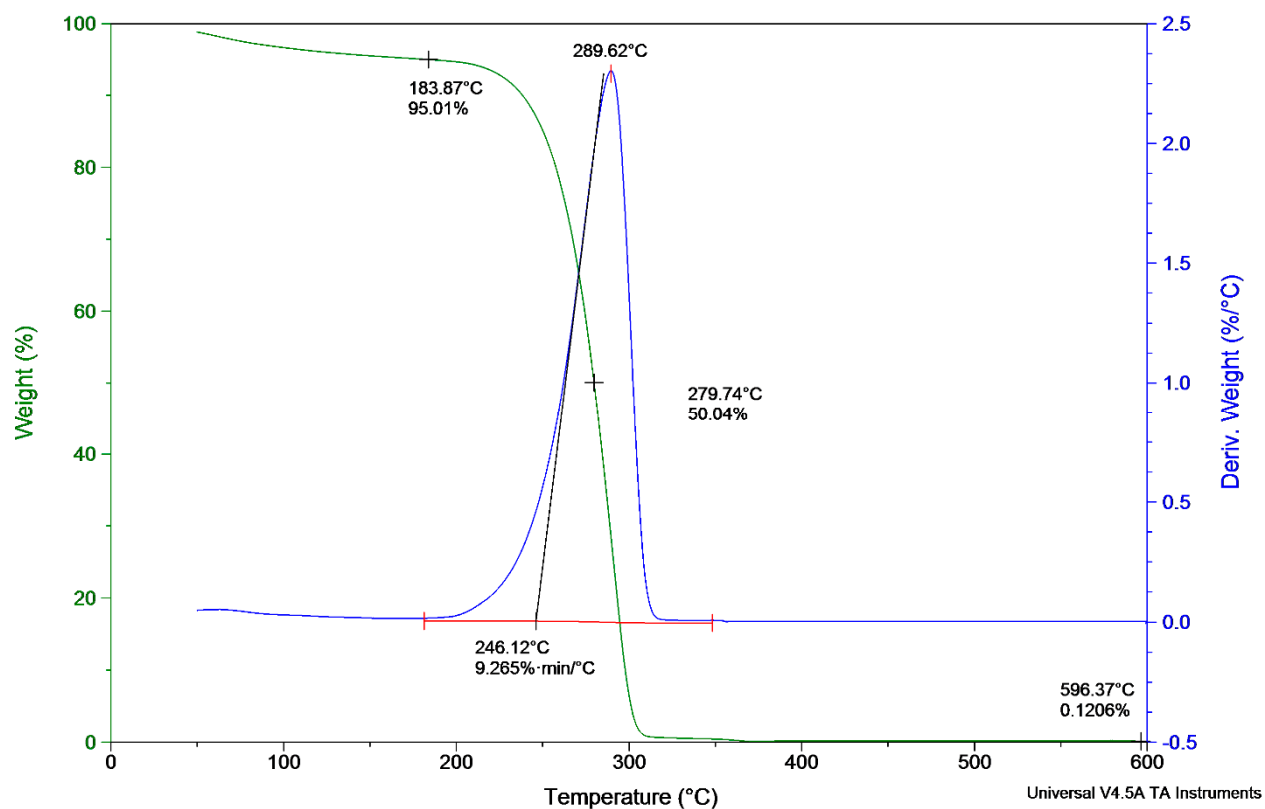
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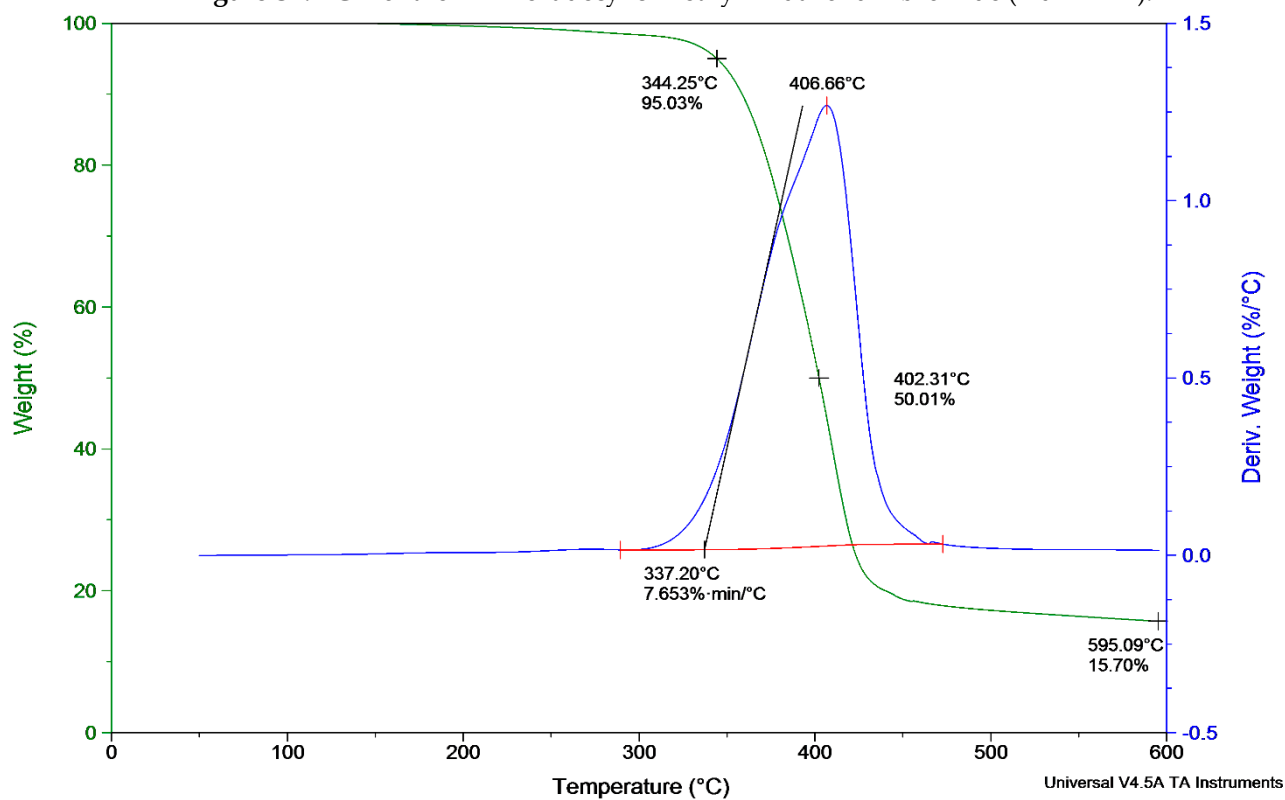
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**Table S1.** Structural assignments of cations and adducts identified in the MALDI-TOF mass spectra of the ILs 1-hexadecyl-3-methylimidazolium bromide (HdmimBr) and 1-hexadecyl-3-methylimidazolium 1,3-dimethyl 5-sulfoisophthalate (HdmimDMSIP).

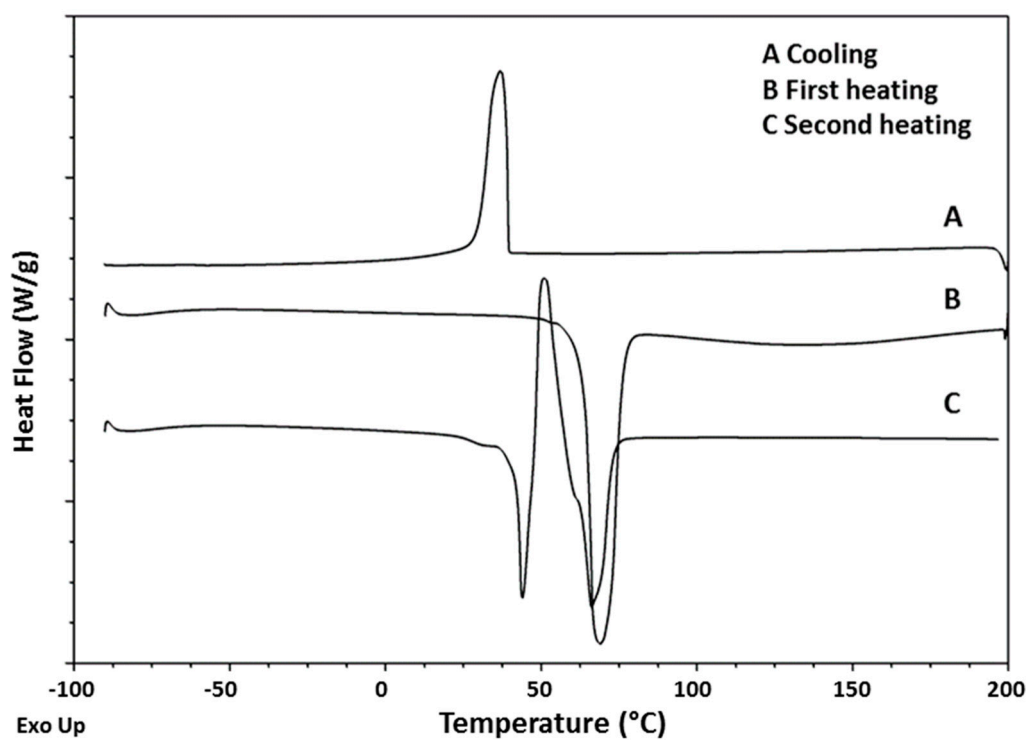
Symbols	Structures	Measured m/z	Calculated m/z
Hdmim <sup>+</sup>		307.4071	307.3113
Hdmim <sup>+</sup> Br <sup>-</sup> + Hdmim <sup>+</sup>		694.994	694.978
Hdmim <sup>+</sup>		307.3396	307.3113
Hdmim <sup>+</sup> DMSIP <sup>-</sup> + HDMIm <sup>+</sup>		887.7729	887.6296



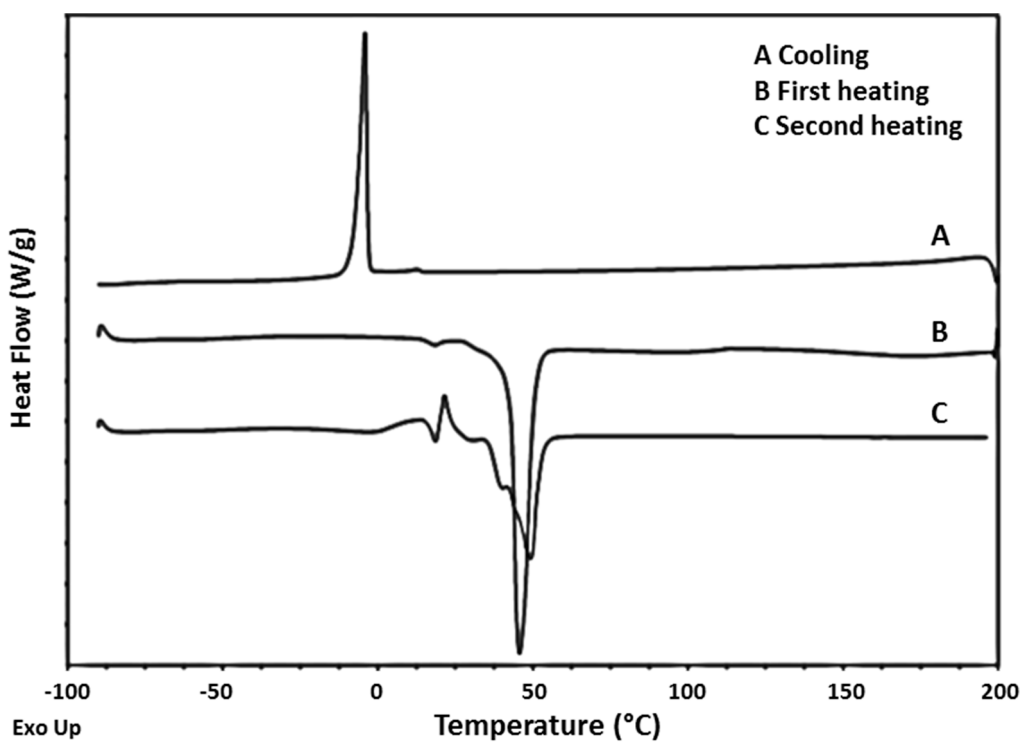
**Figure S1.** TGA of the IL 1-hexadecyl-3-methylimidazolium bromide (HdmimBr).



**Figure S2.** TGA of the IL 1-hexadecyl-3-methylimidazolium 1,3-dimethyl 5-sulfoisophthalate (HdmimDMSIP).



**Figure S3.** DSC of the IL 1-hexadecyl-3-methylimidazolium bromide (HdmimBr). Curves are displaced for clarity.



**Figure S4.** DSC curves of the IL 1-hexadecyl-3-methylimidazolium 1,3-dimethyl 5-sulfoisophthalate (HdmimDMSIP). Curves are displaced for clarity.

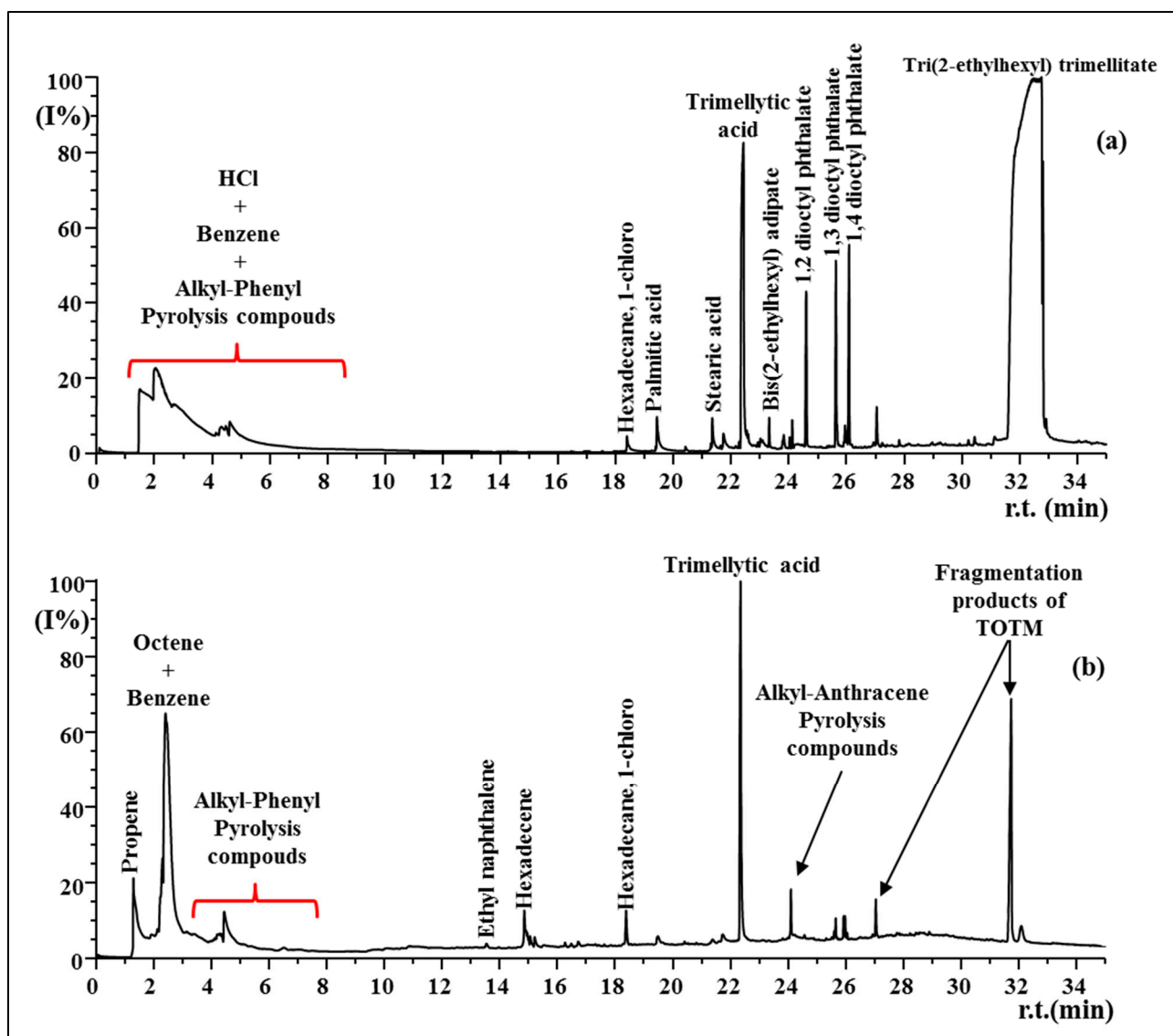
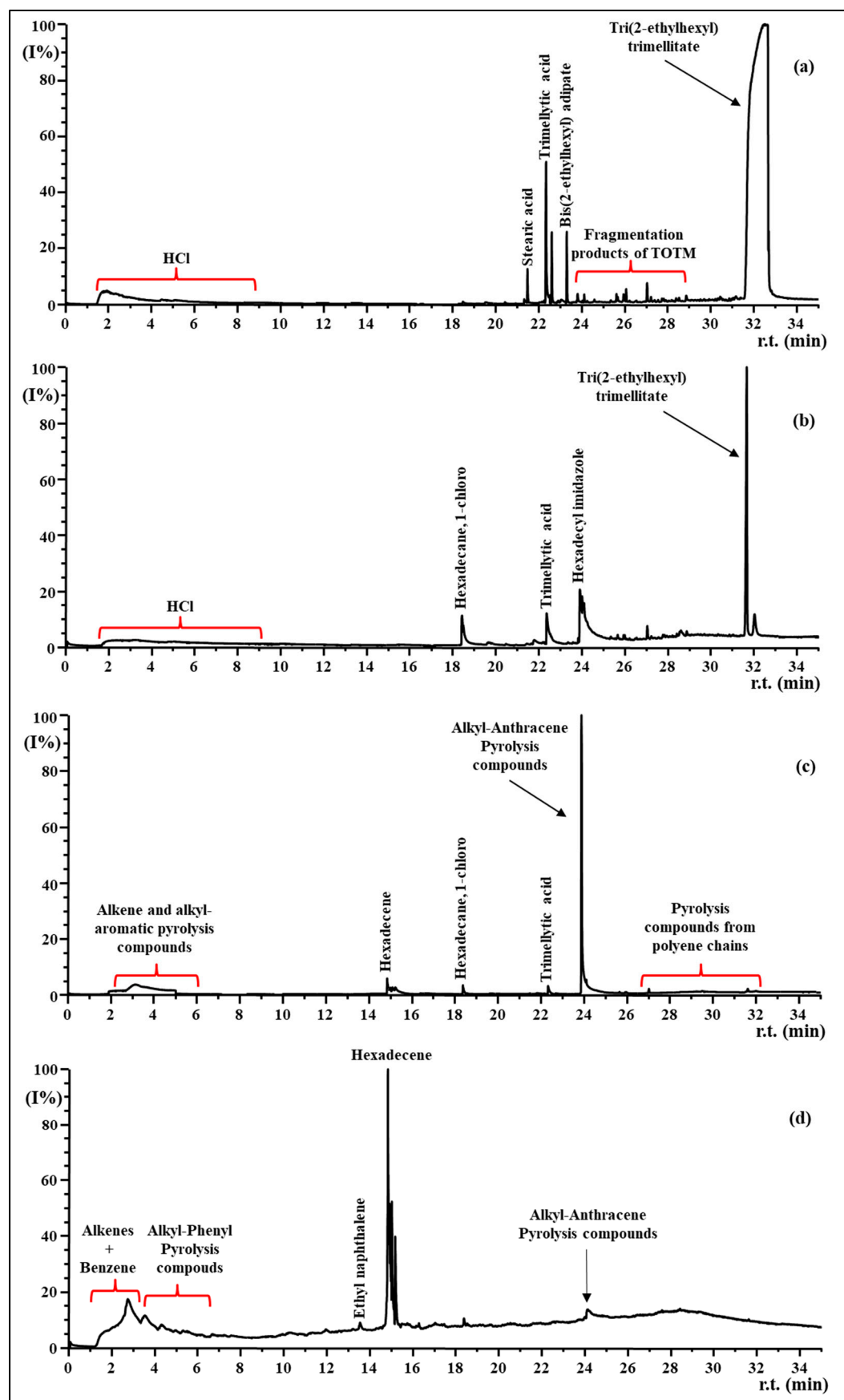
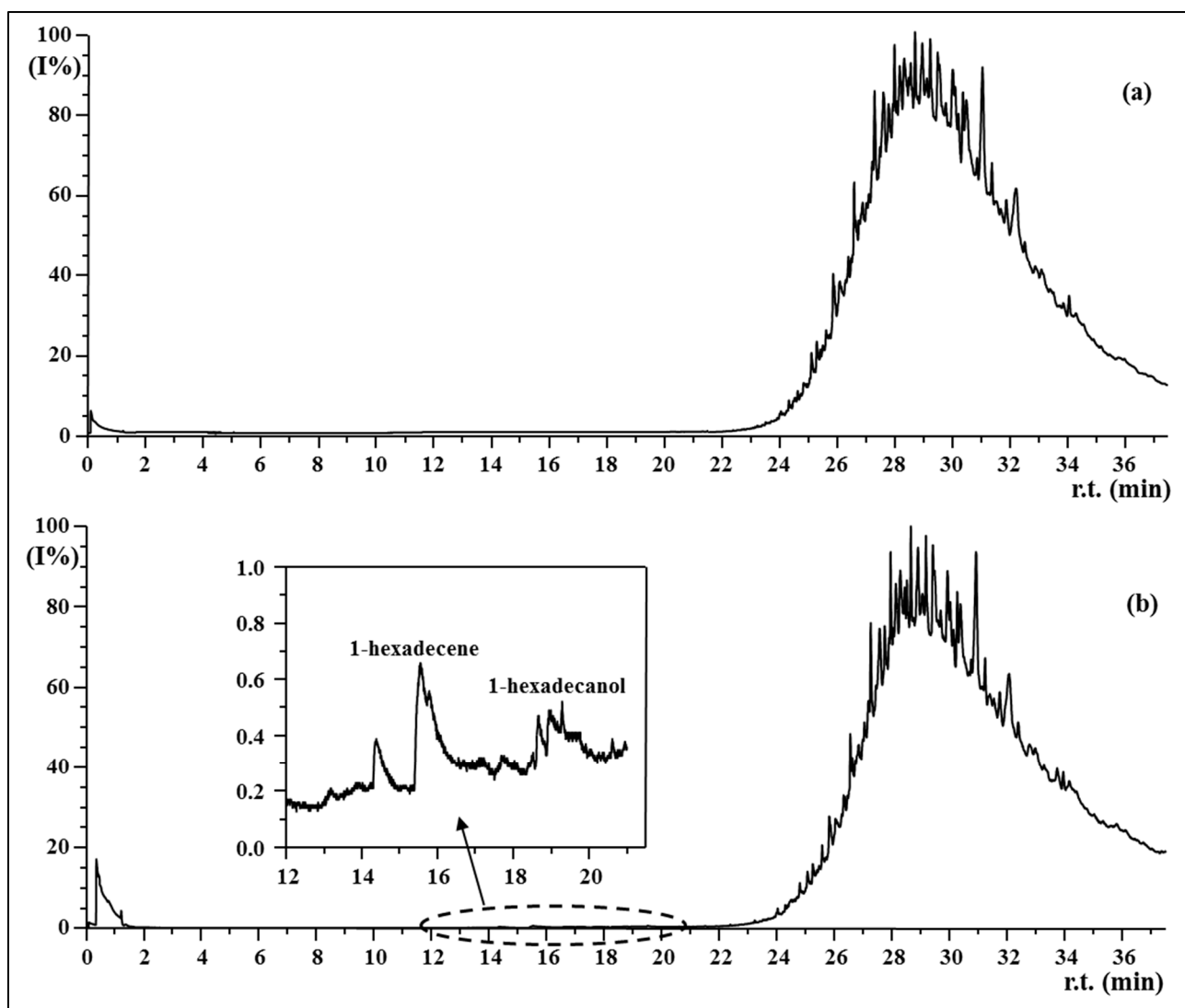


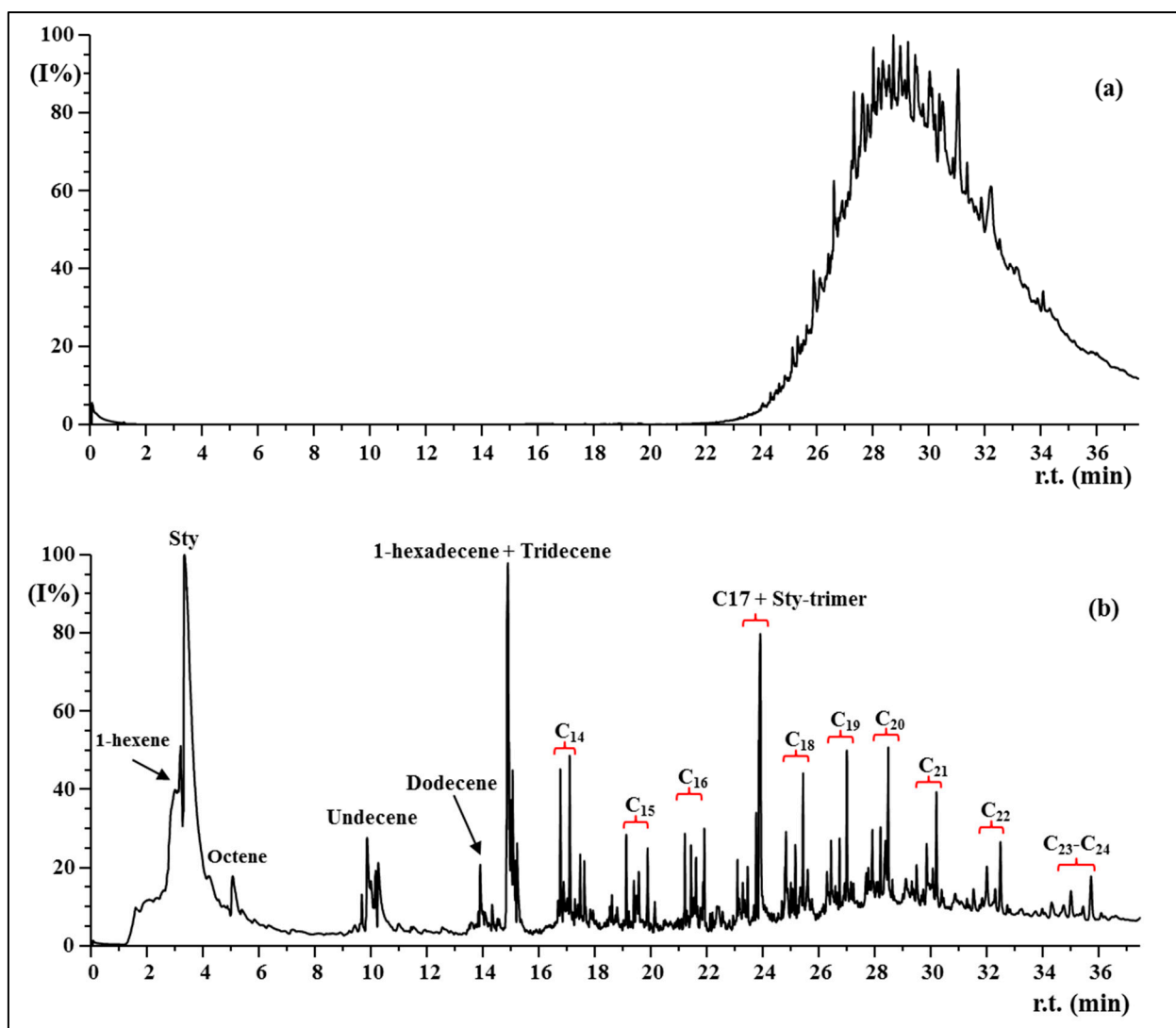
Figure S5. Py-GCMS pyrograms of the pyrolysis products of the PVC/1% HdmimDMSIP blend at (a) 300°C and (b) 450 °C.



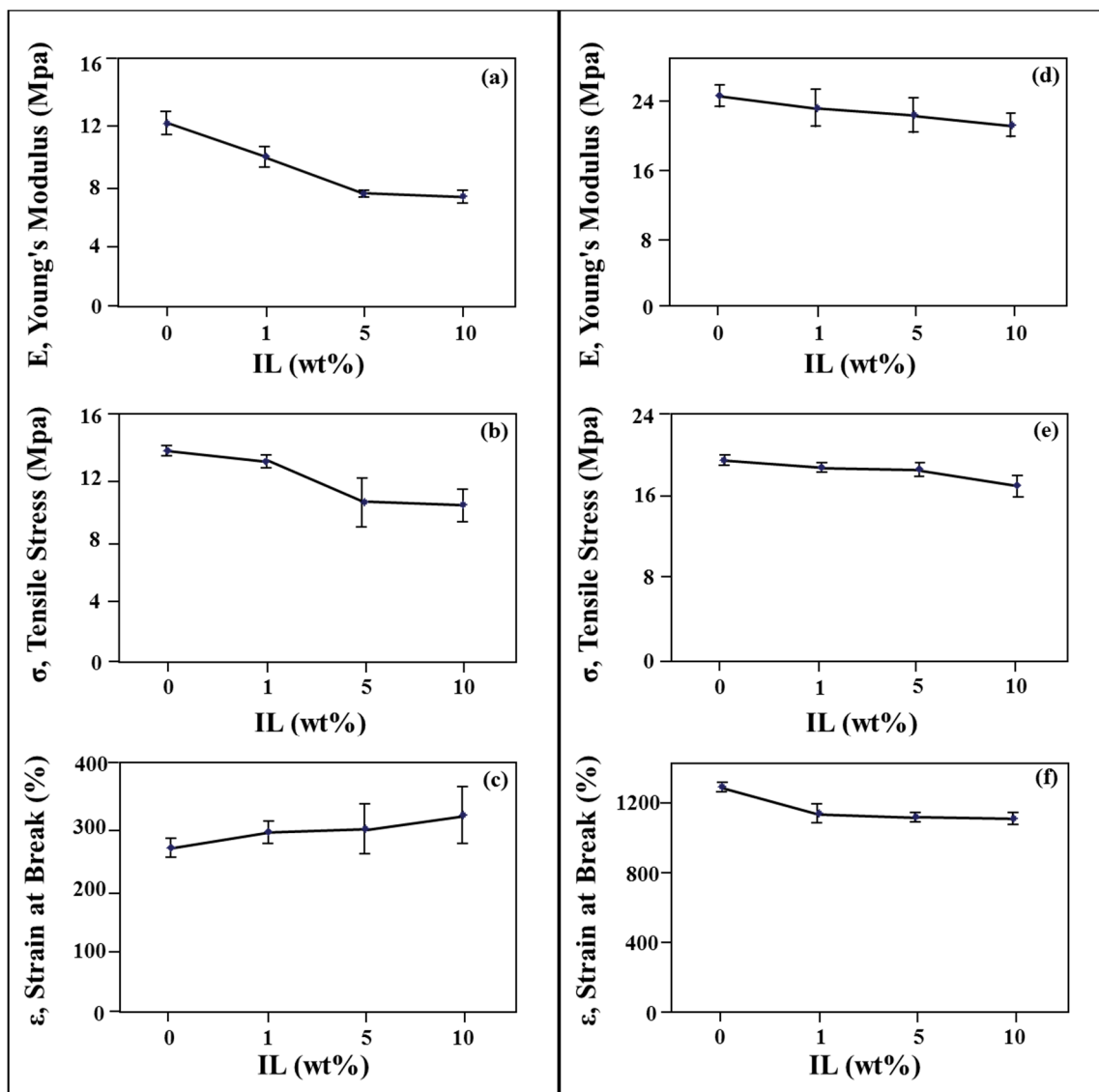
**Figure S6.** Py-GCMS pyrograms of the pyrolysis products of the PVC/5% HdmimDMSIP blend at (a) 260°C, (b) 300°C and (c) 350 and (d) 450 °C.



**Figure S7.** Py-GCMS pyrograms of the pyrolysis products of the neat SEBS (a) and SEBS/10% HdmimDMSIP blend (b) both at 300°C. The inset shows the fragmentation products from the HdmimDMSIP.

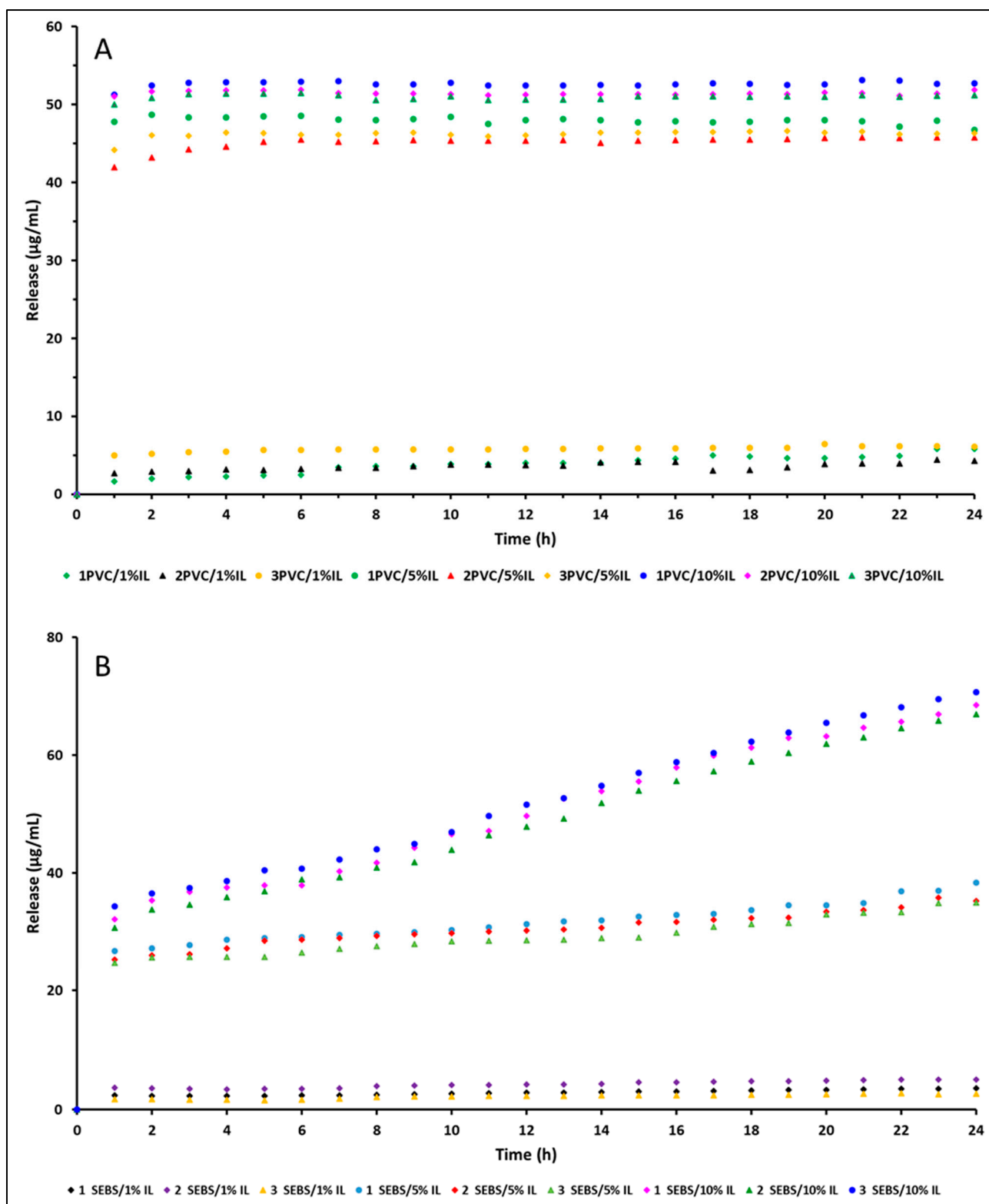


**Figure S8.** Py-GCMS pyrograms of the pyrolysis products of the SEBS/5% HdmimDMSIP blend at (a) 300°C and (b) 450 °C.

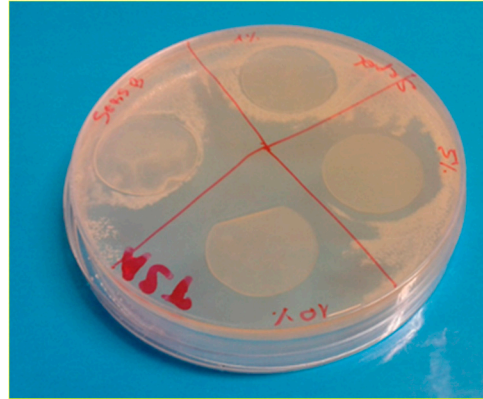


**Figure S9.** Mechanical properties (Young's modulus, Tensile strength and Elongation at break percentage) of the PVC/HdmimDMSIP (a,b,c) and SEBS/HdmimDMSIP (d, e, f) blends as HdmimDMSIP % increases.





**Figure S10.** IL release from (A) PVC/HdmimDMSIP and (B) SEBS/HdmimDMSIP blends. Each point represents the HdmimDMSIP release from the PVC/HdmimDMSIP and SEBS/HdmimDMSIP blends at fixed times (1-24 h).



**Figure S11.** Inhibition haloes induced by the SEBS/HdmimDMSIP blends, loaded with three different concentration of HdmimDMSIP (0.5%, 1%, 5%), on TSA seeded with *S. epidermidis* ( $10^6$  CFU/ml).