

# Supplementary data

## **Evaluation of structural modification of ibuprofen on the penetration release of ibuprofen from drug-in-adhesive matrix type transdermal patch**

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Number of pages: 15

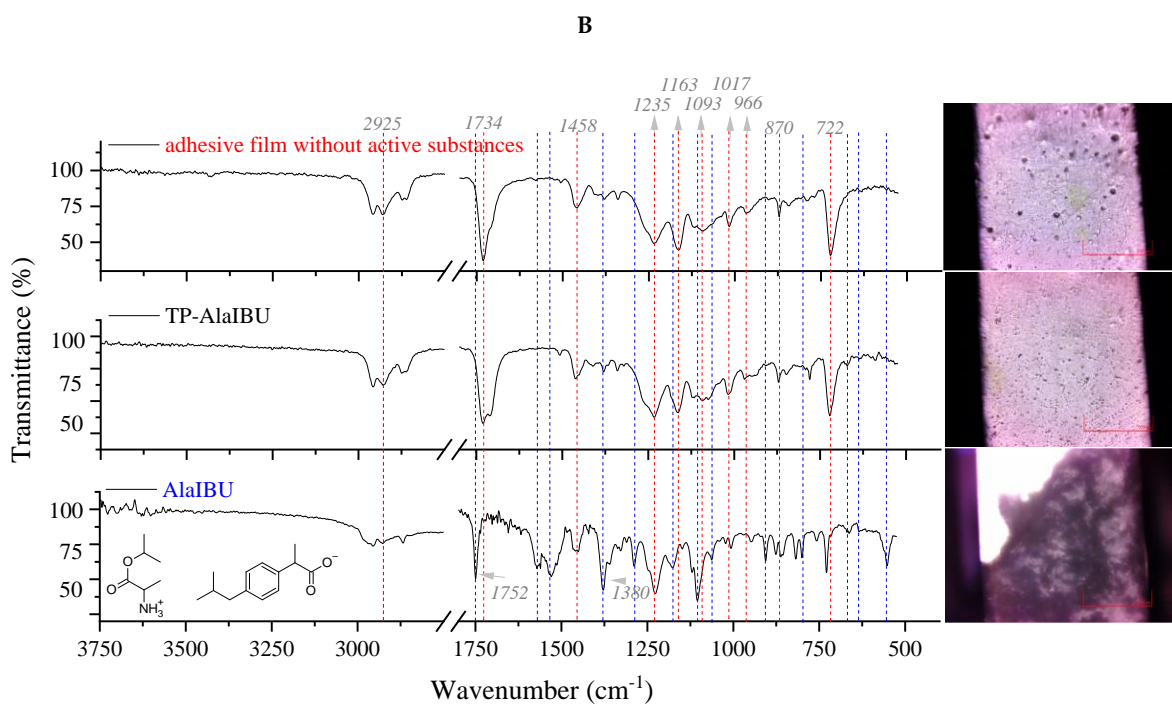
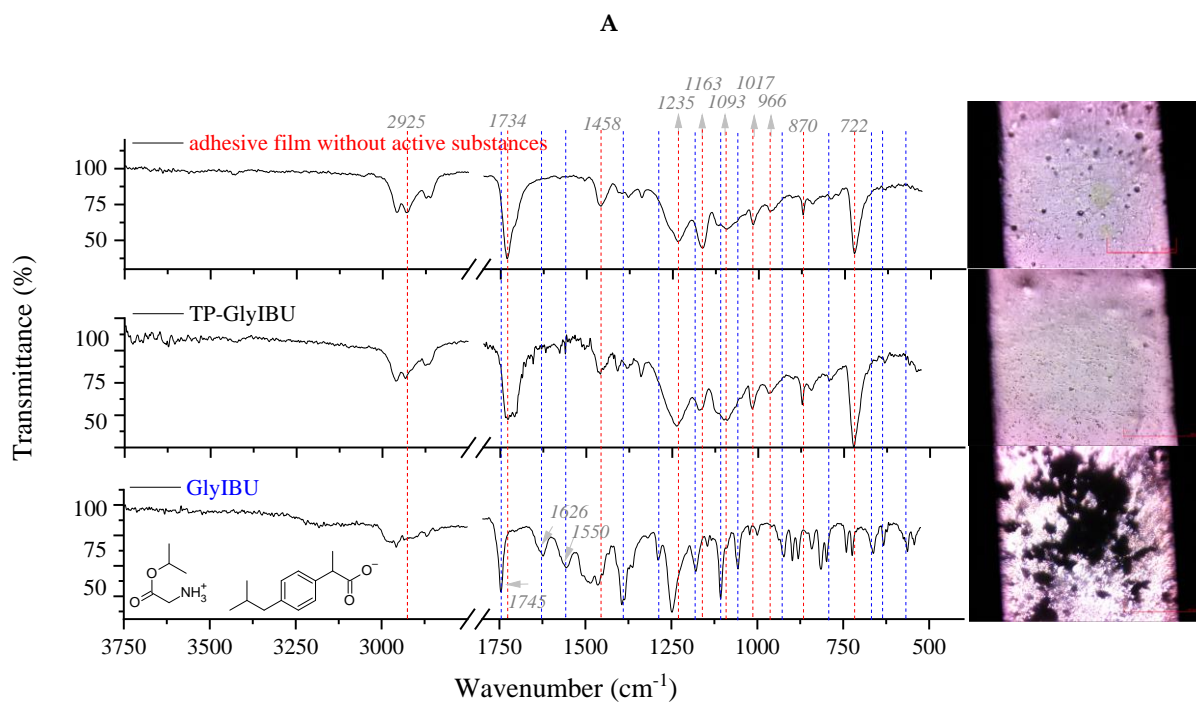
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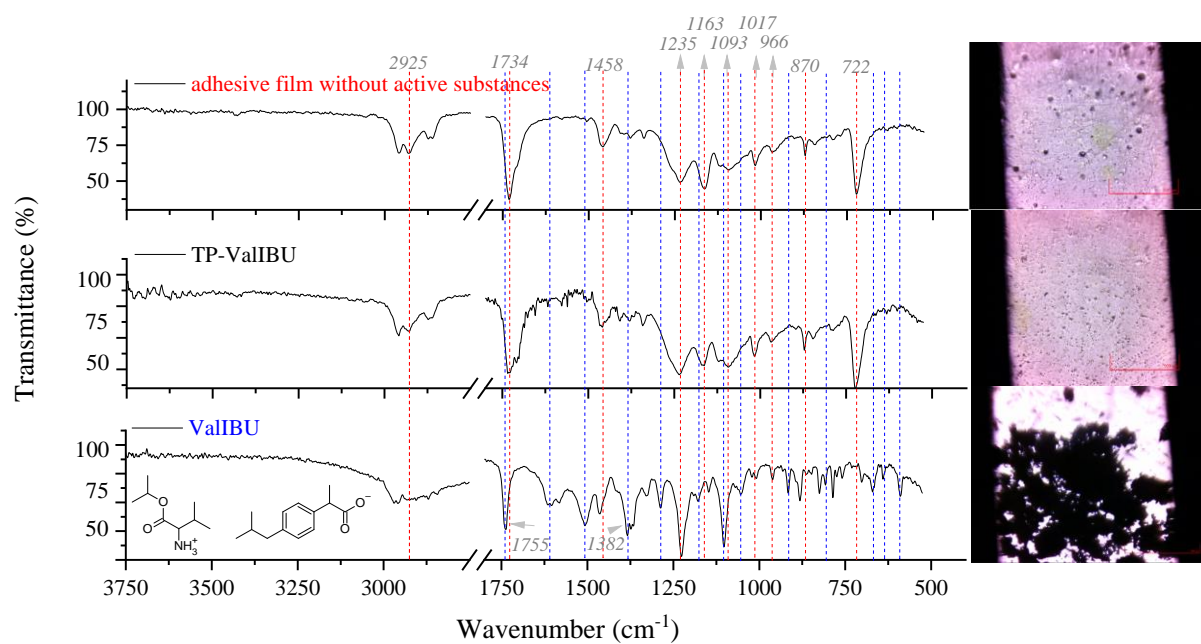
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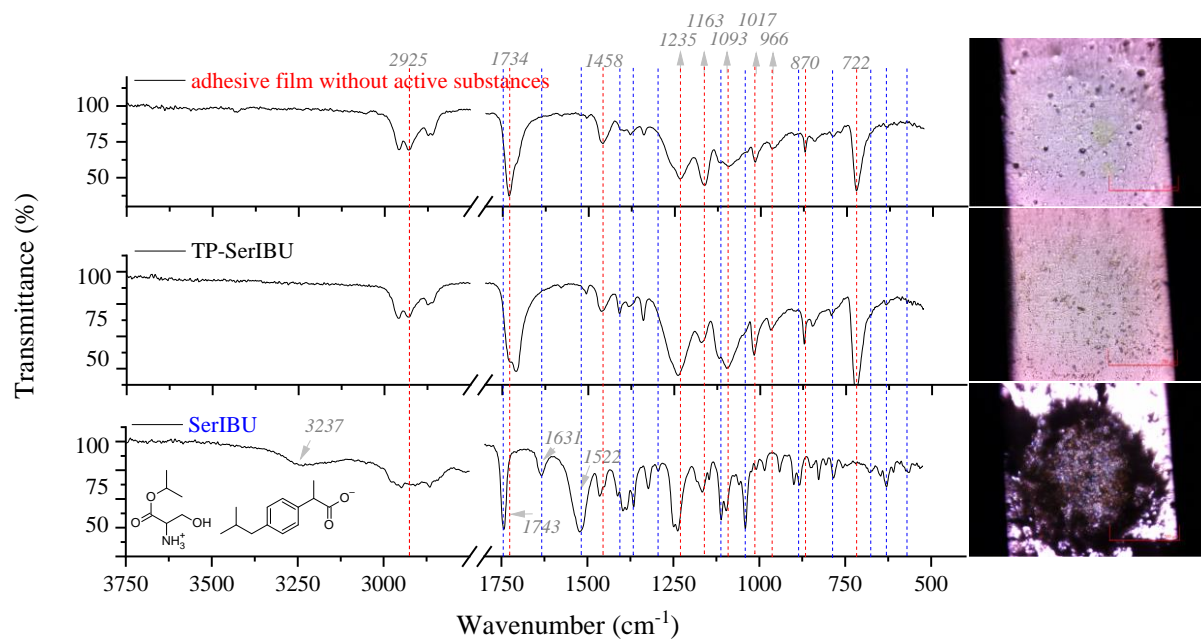
## Microspectroscopy analysis of the transdermal patch

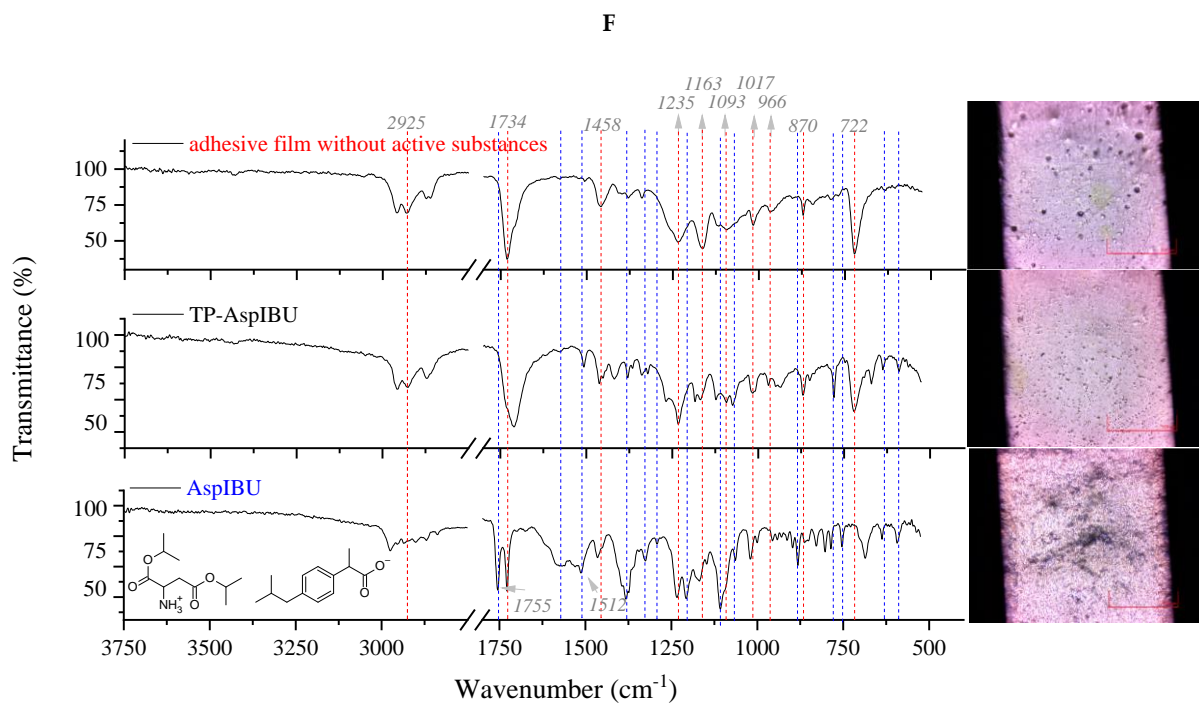
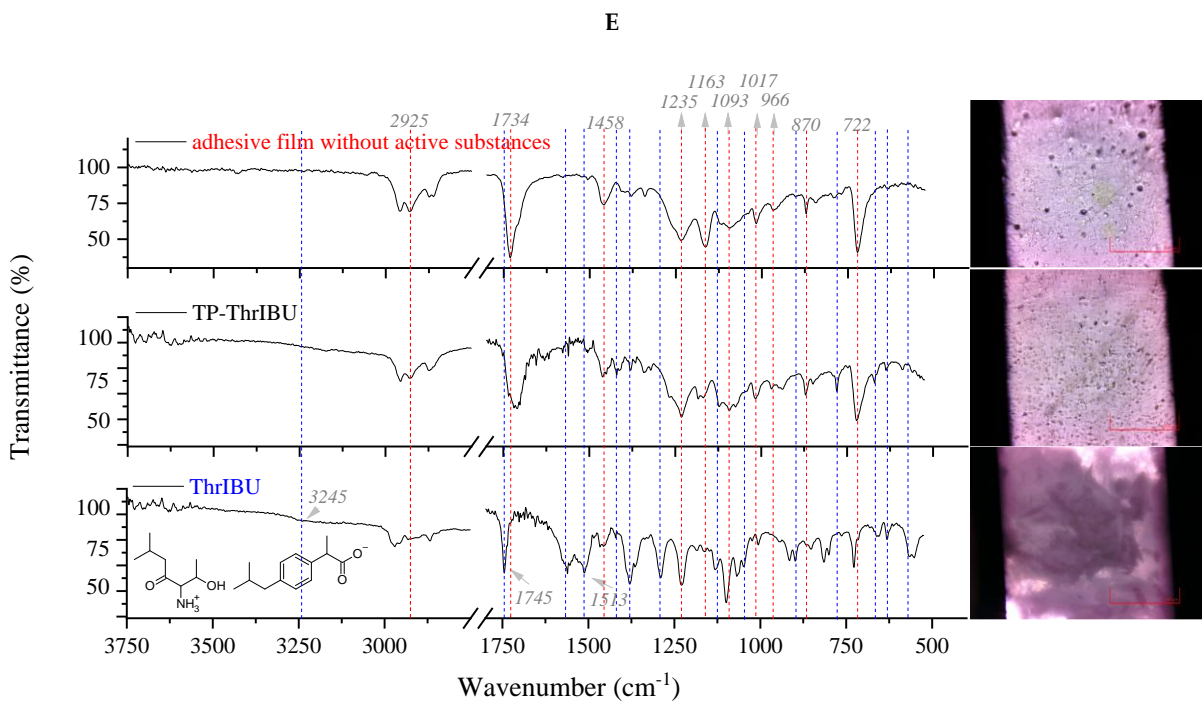


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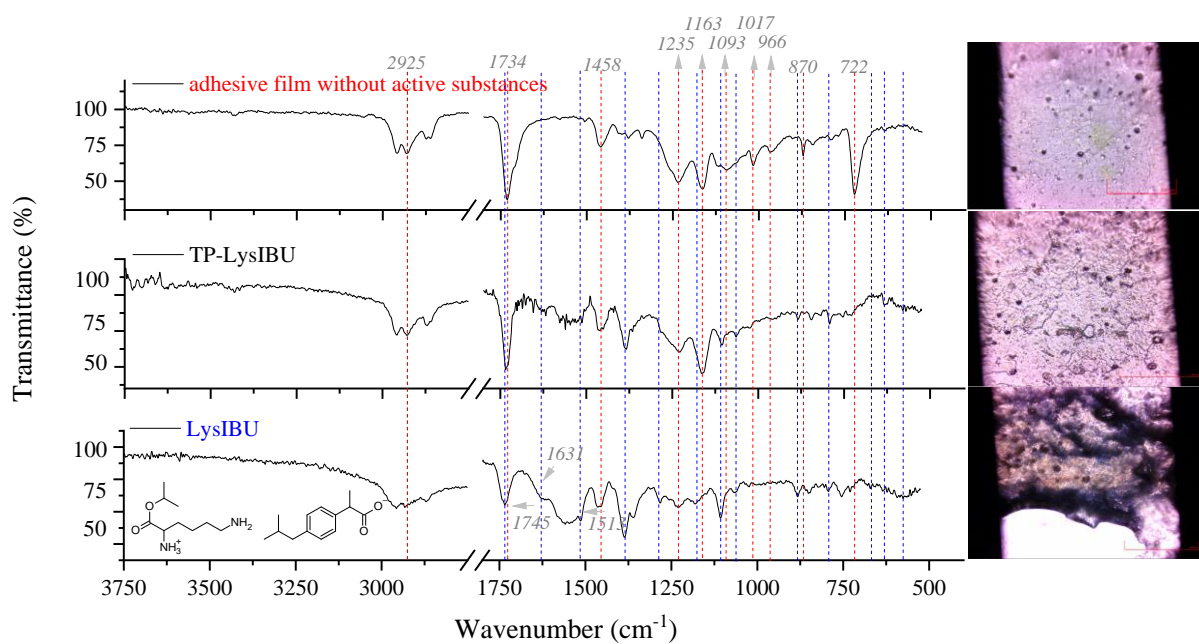


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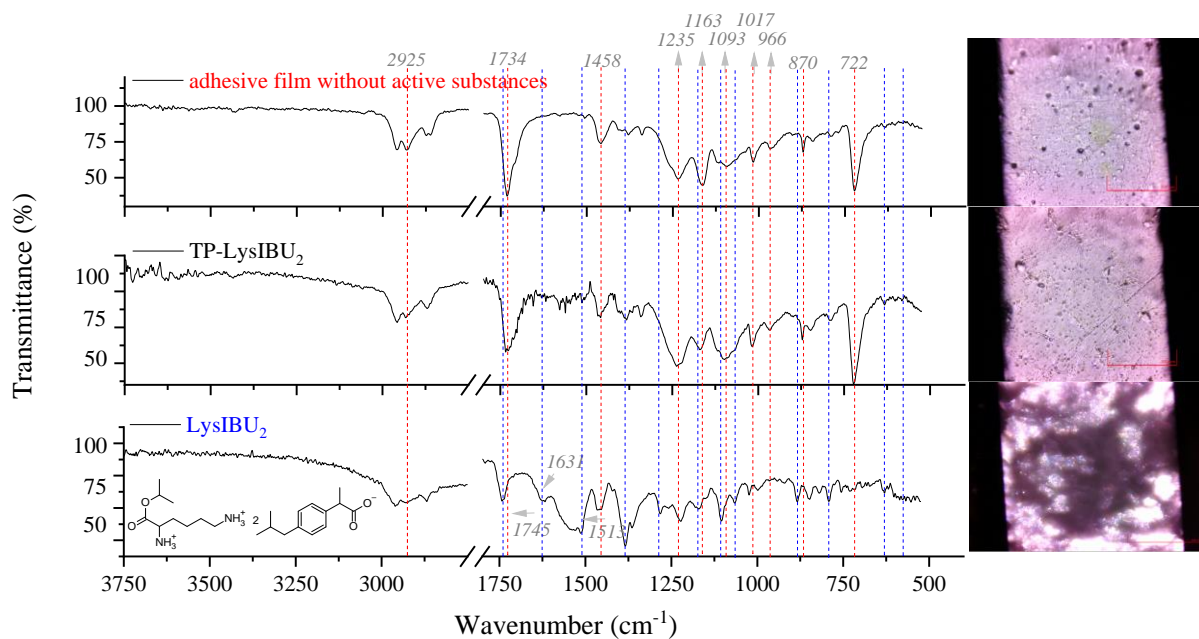


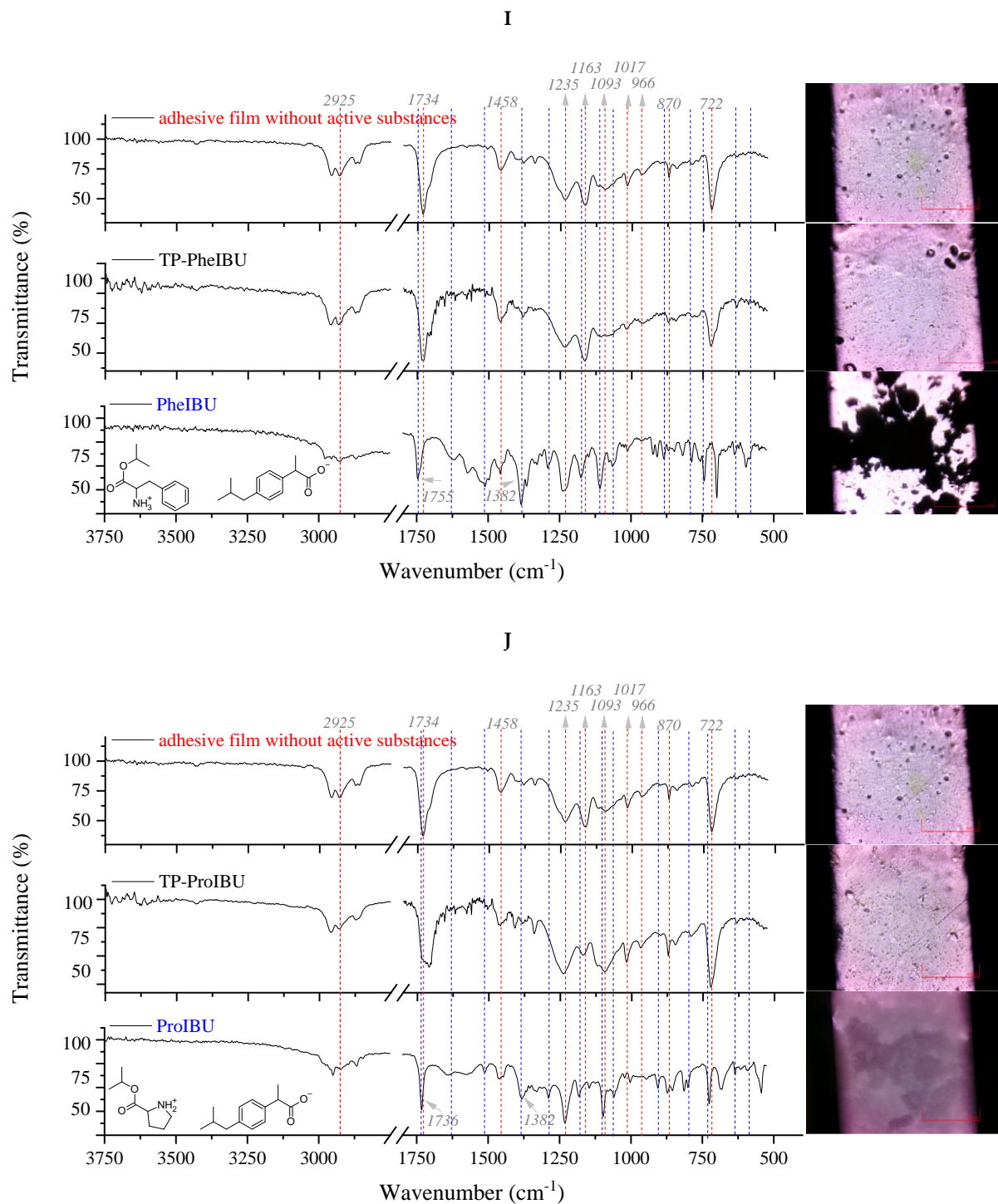


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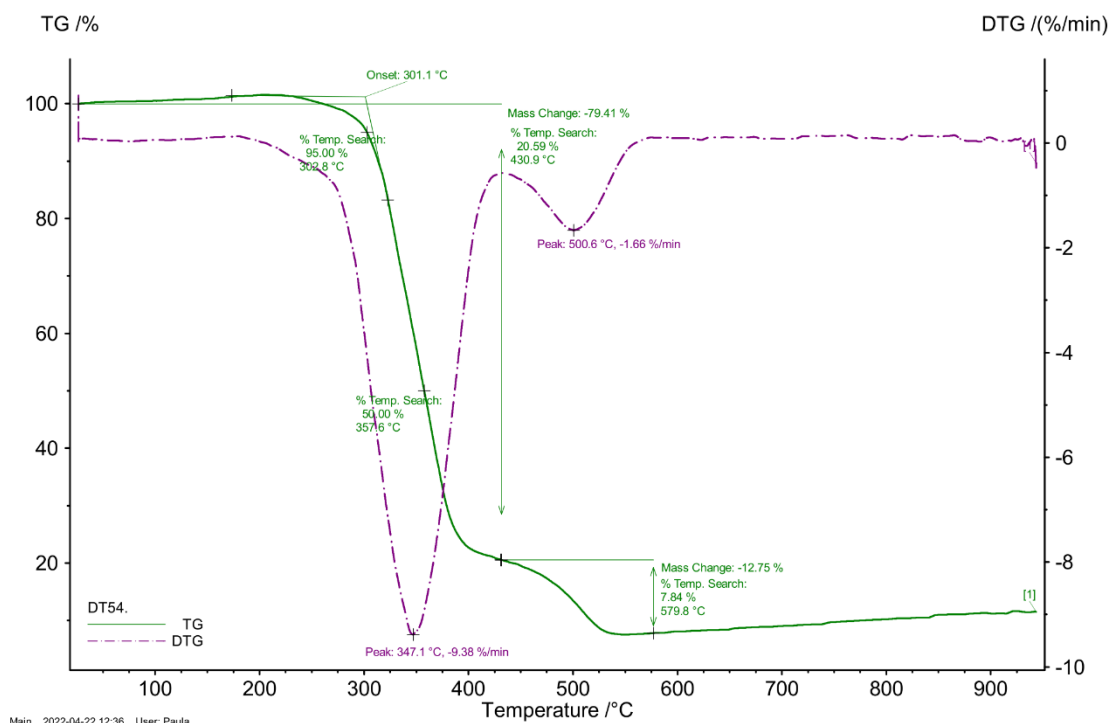
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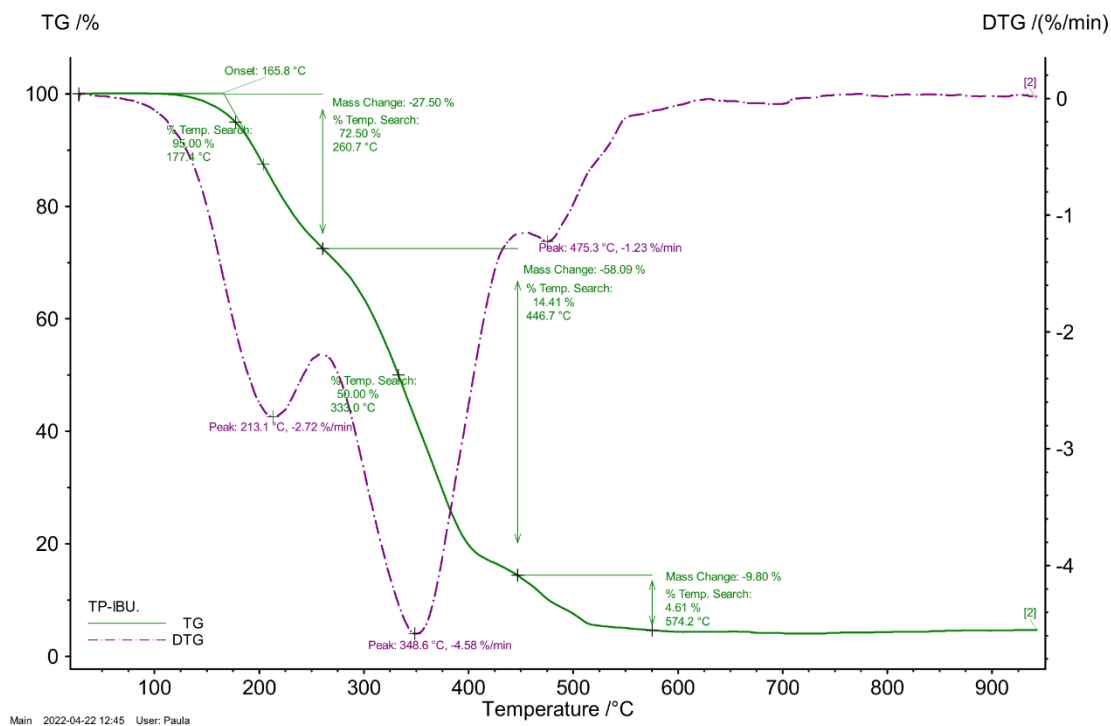


**Figure S1.** Microspectroscopy analysis of the transdermal patch (TP) – (A) with GlyIBU; (B) with AlaIBU; (C) with ValIBU; (D) with SerIBU; (E) with ThrIBU; (F) with AspIBU; (G) with LysIBU; (H) with LysIBU<sub>2</sub>; (I) with PheIBU; (J) with ProIBU.

## The TG curves of obtained patches

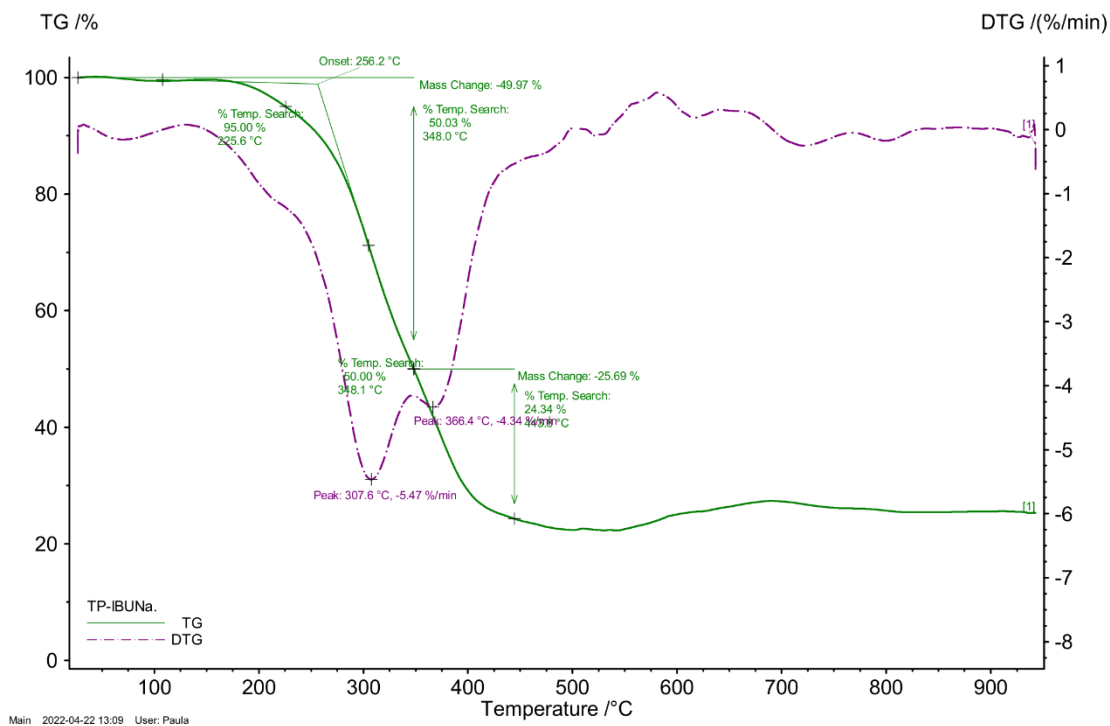


**Figure S2.** The TG and DTG curves of DT54 patch.

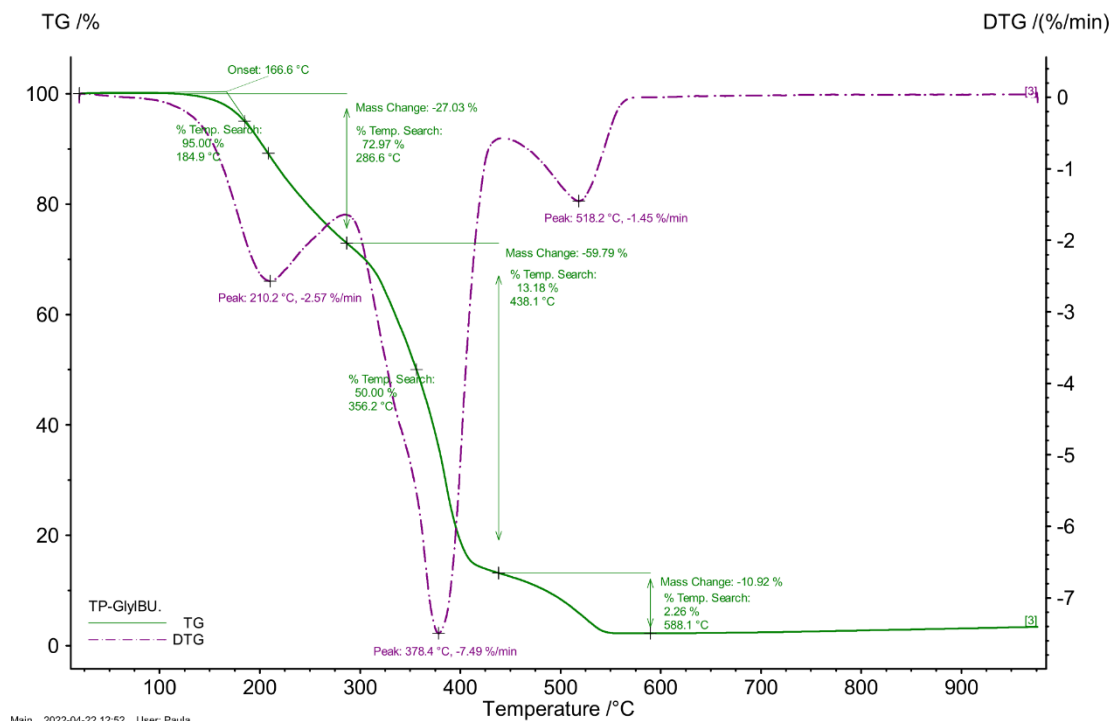


**Figure S3.** The TG and DTG curves of TP-IBU patch.



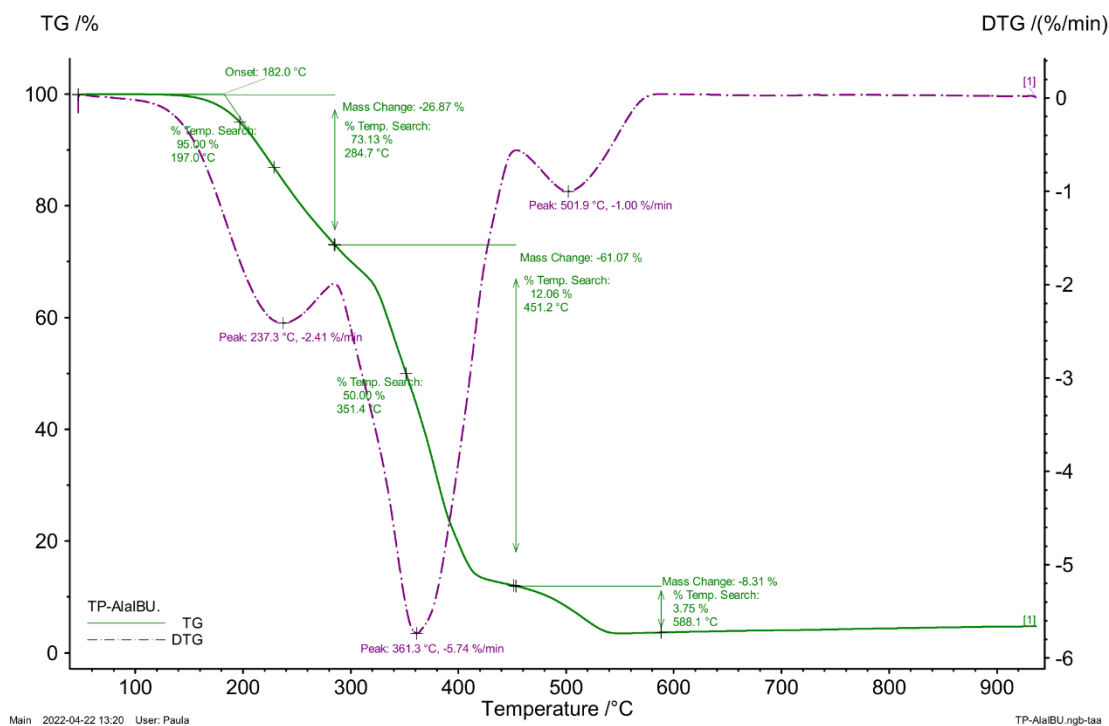


**Figure S4.** The TG and DTG curves of TP-IBUNa patch.

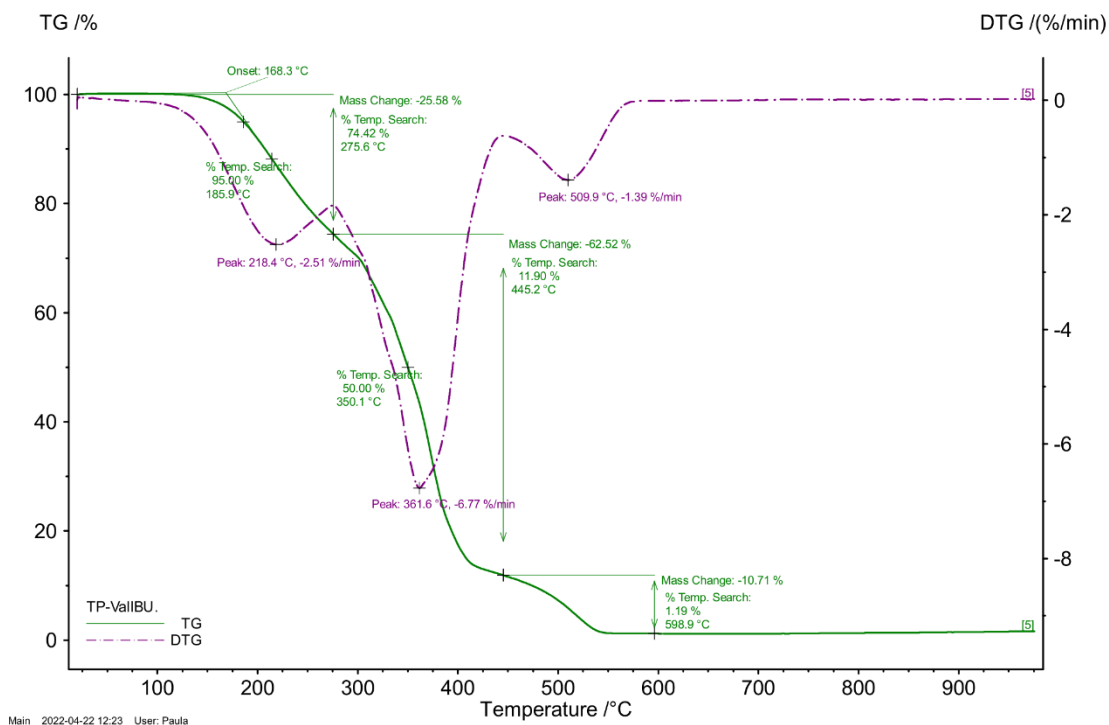


**Figure S5.** The TG and DTG curves of TP-GlyIBU patch.

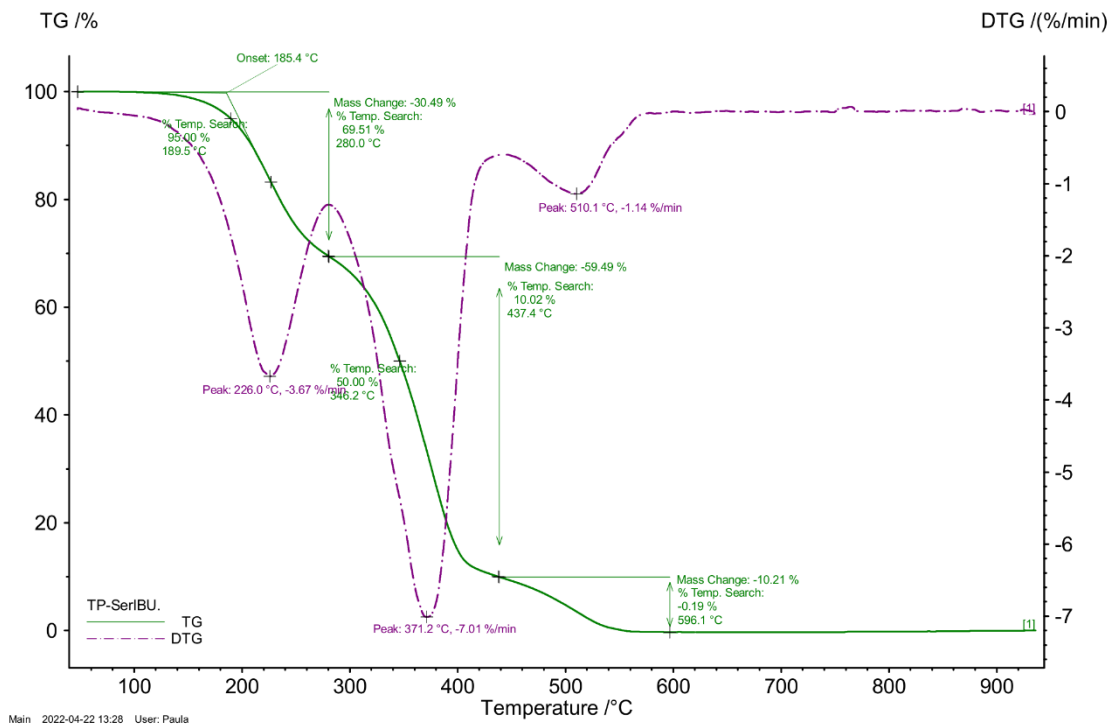




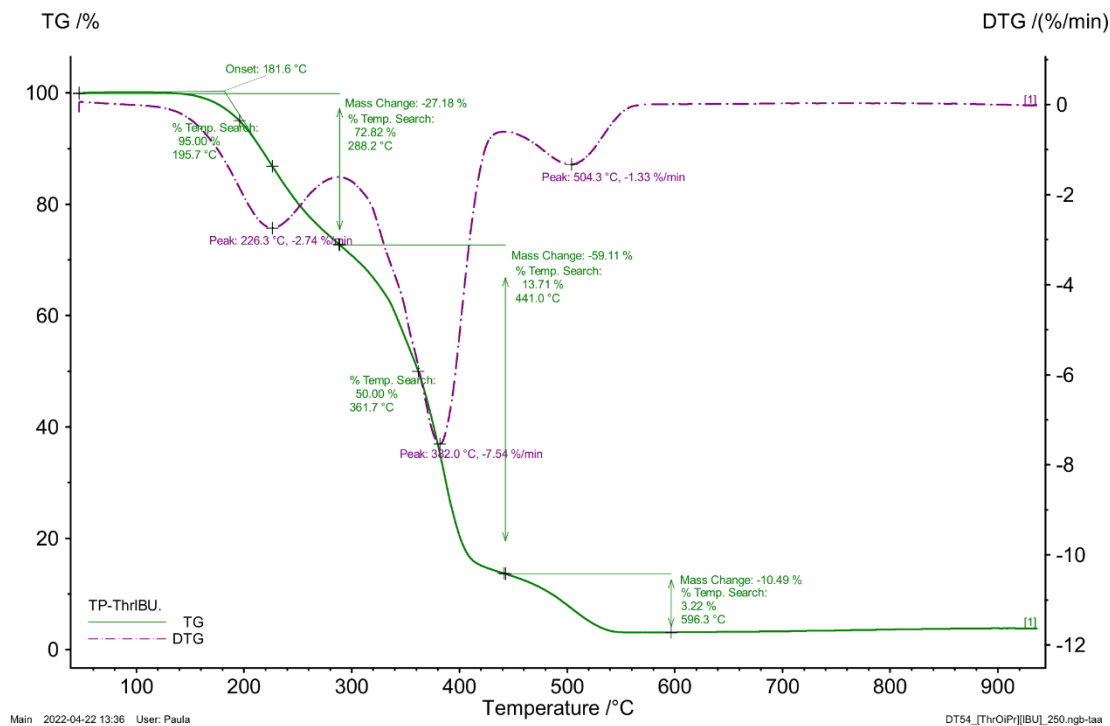
**Figure S6.** The TG and DTG curves of TP-AlalBU patch.



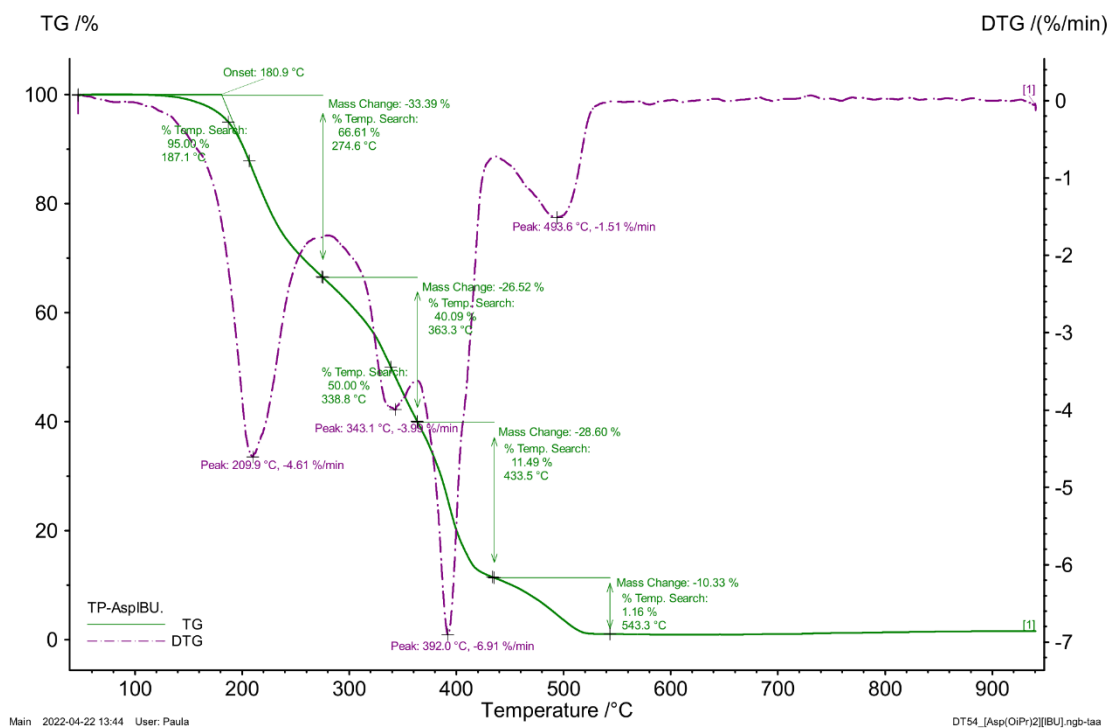
**Figure S7.** The TG and DTG curves of TP-ValIBU patch.



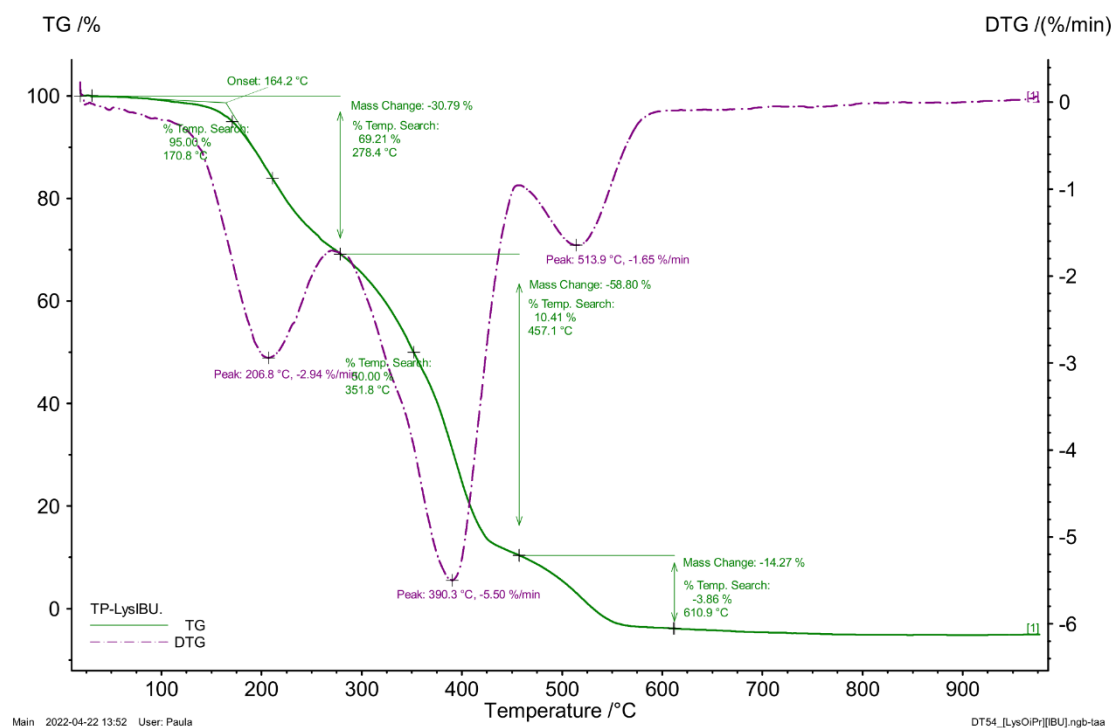
**Figure S8.** The TG and DTG curves of TP-SerIBU patch.



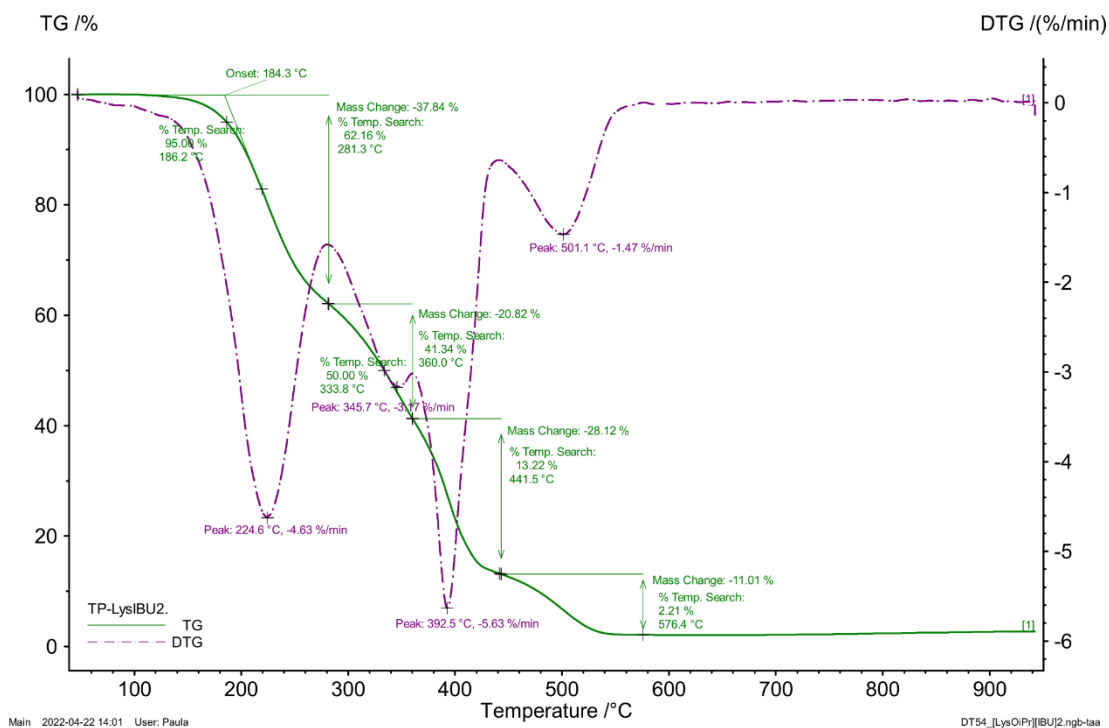
**Figure S9.** The TG and DTG curves of TP-ThrIBU patch.



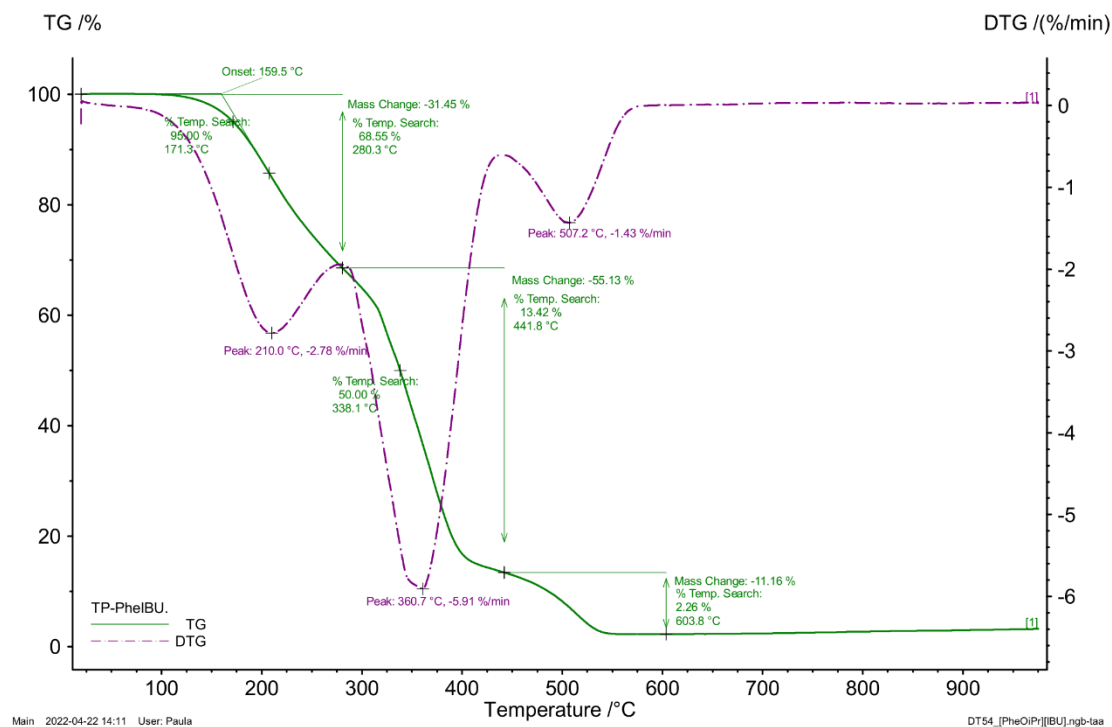
**Figure S10.** The TG and DTG curves of TP-AspIBU patch.



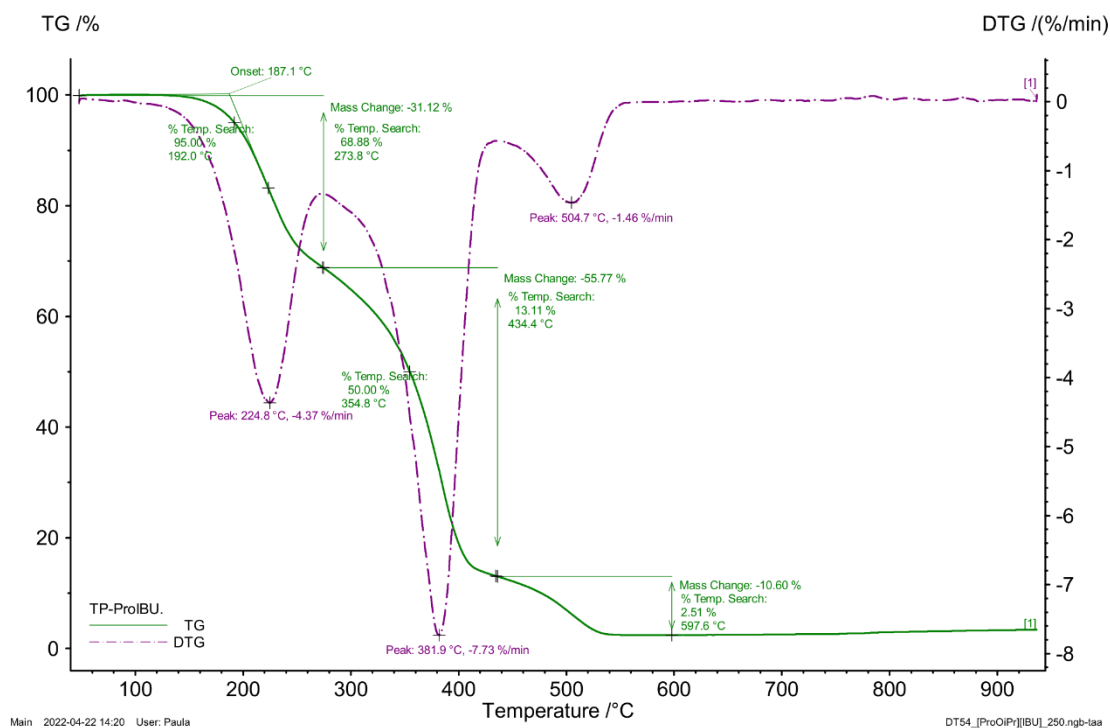
**Figure S11.** The TG and DTG curves of TP-LysIBU patch.



**Figure S12.** The TG and DTG curves of TP-LysIBU<sub>2</sub> patch.

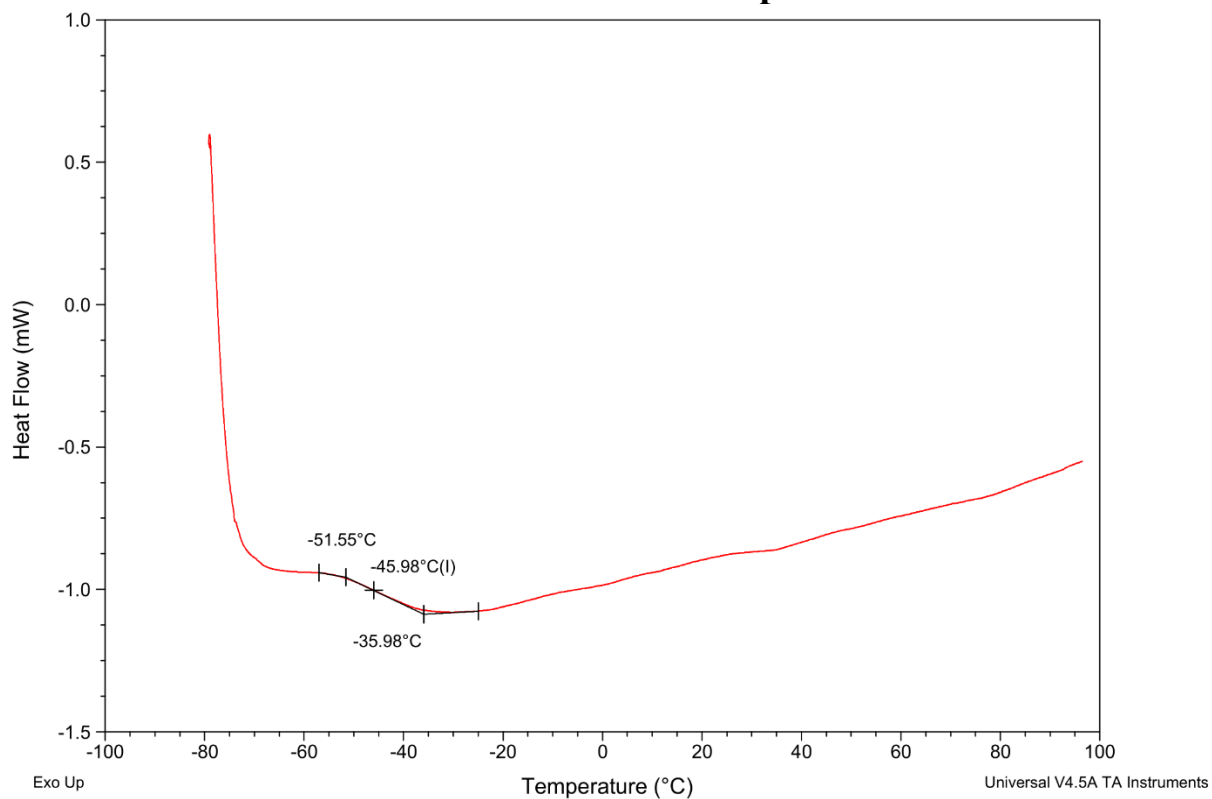


**Figure S13.** The TG and DTG curves of TP-PheIBU patch.

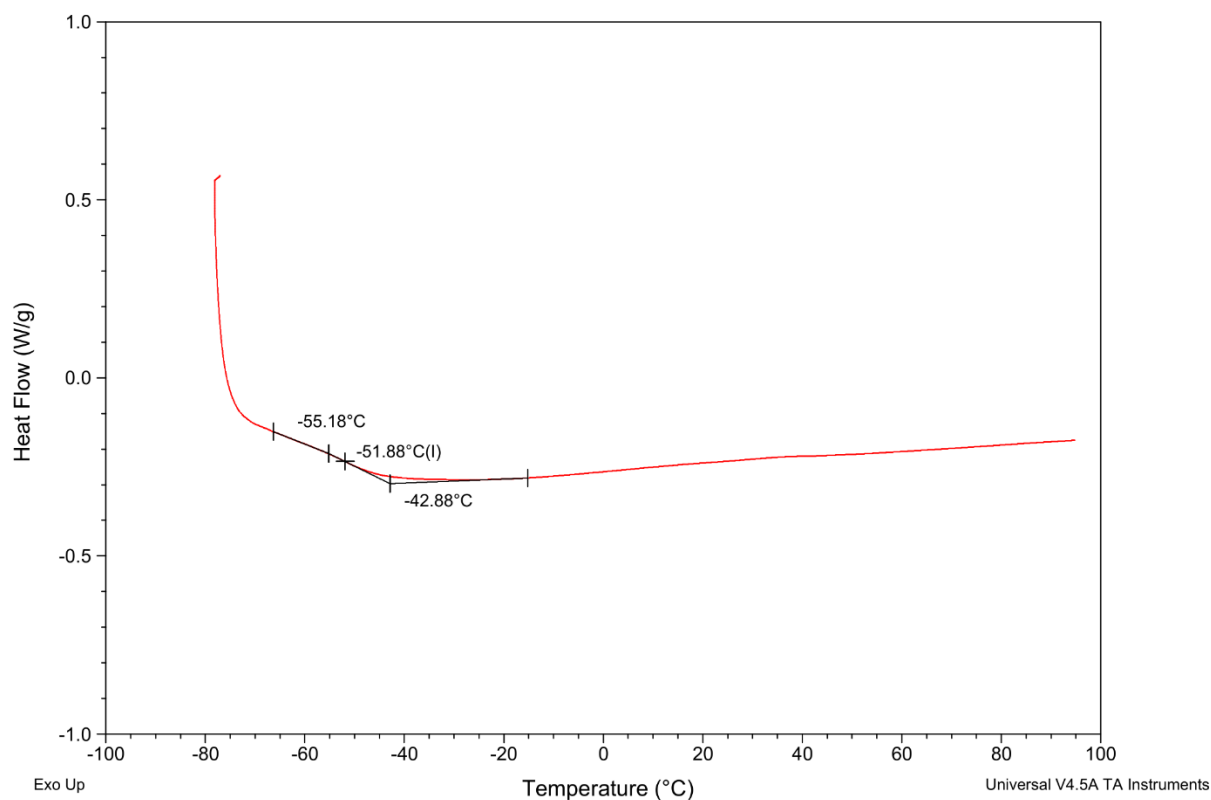


**Figure S14.** The TG and DTG curves of TP-ProIBU patch.

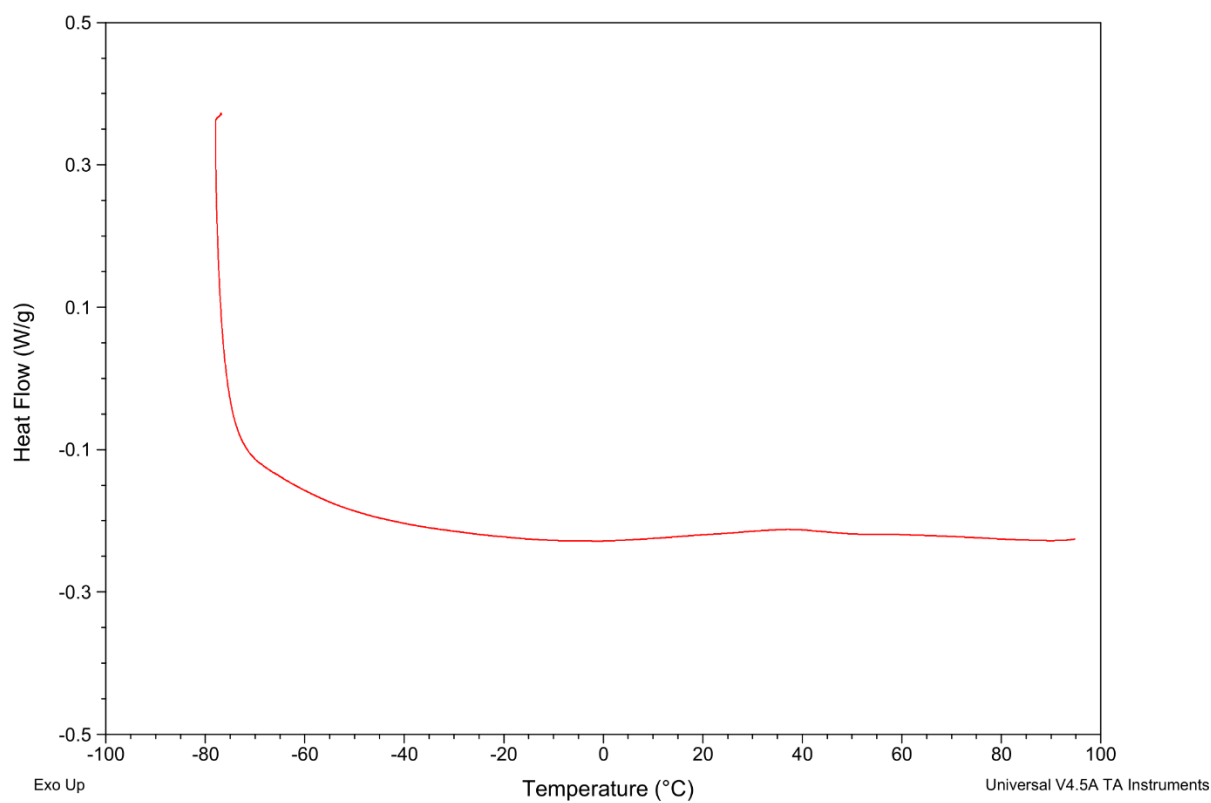
### The DSC curves of obtained patches



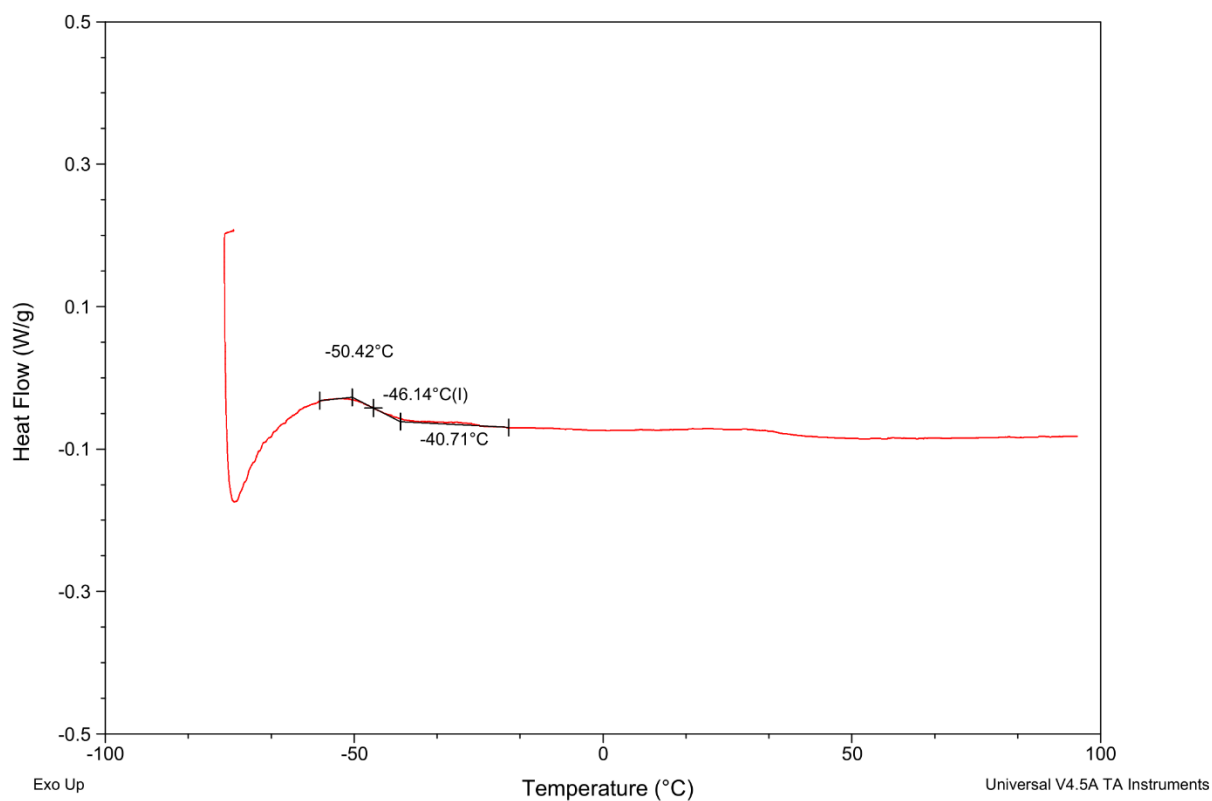
**Figure S15.** The DSC curve of DT54 patch.



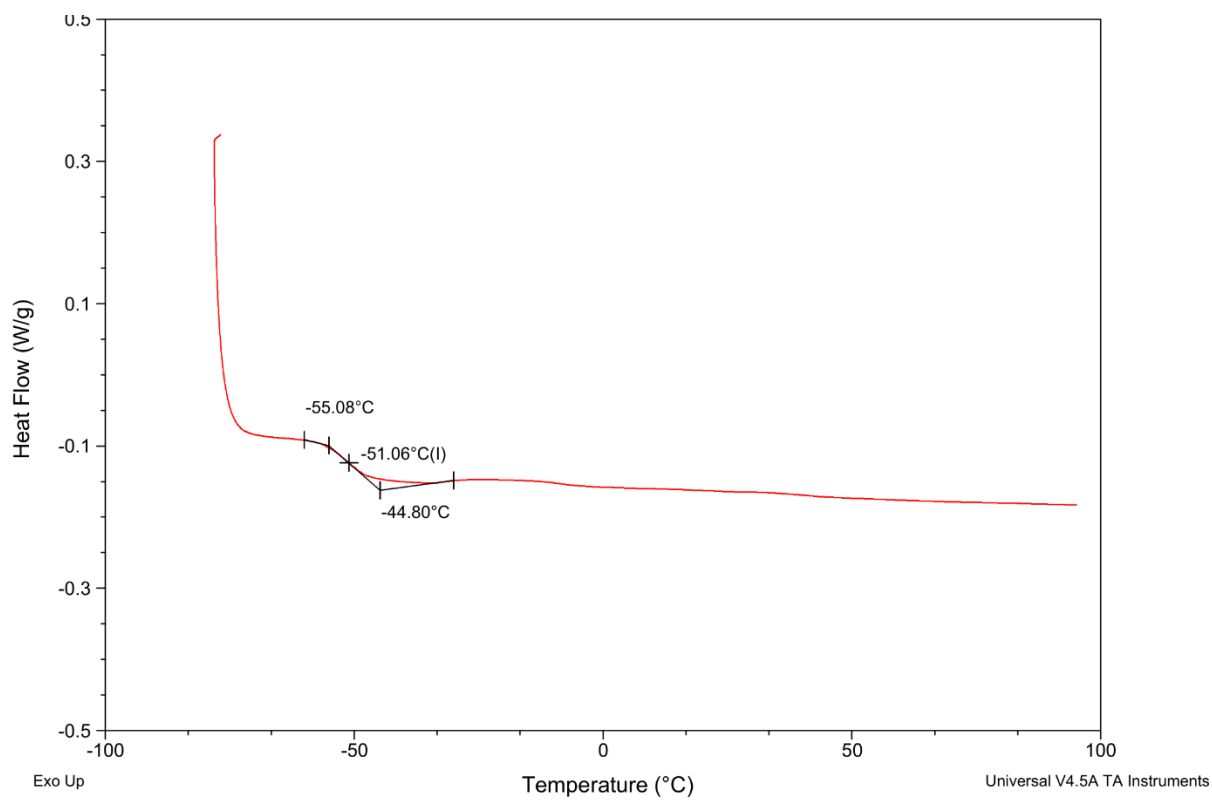
**Figure S16.** The DSC curve of TP-IBU patch.



**Figure S17.** The DSC curve of TP-IBUNa patch.

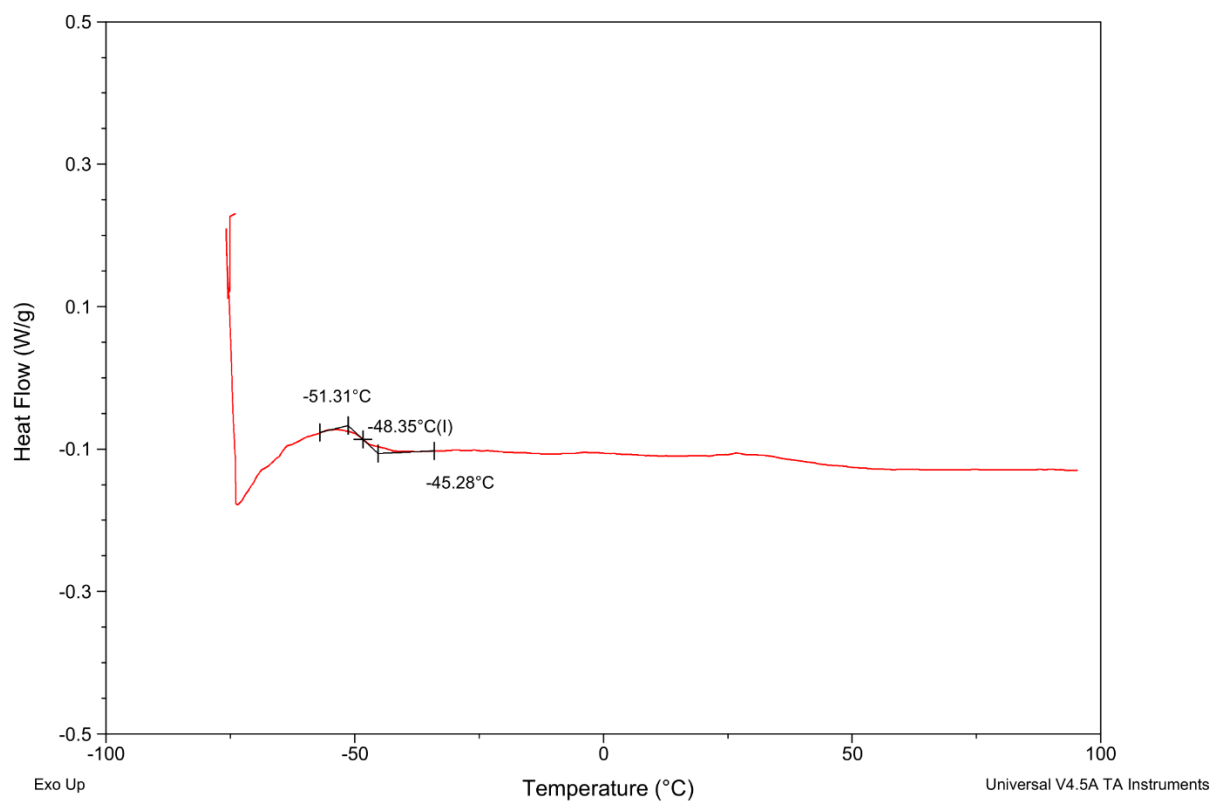


**Figure S18.** The DSC curve of TP-GlyIBU patch.

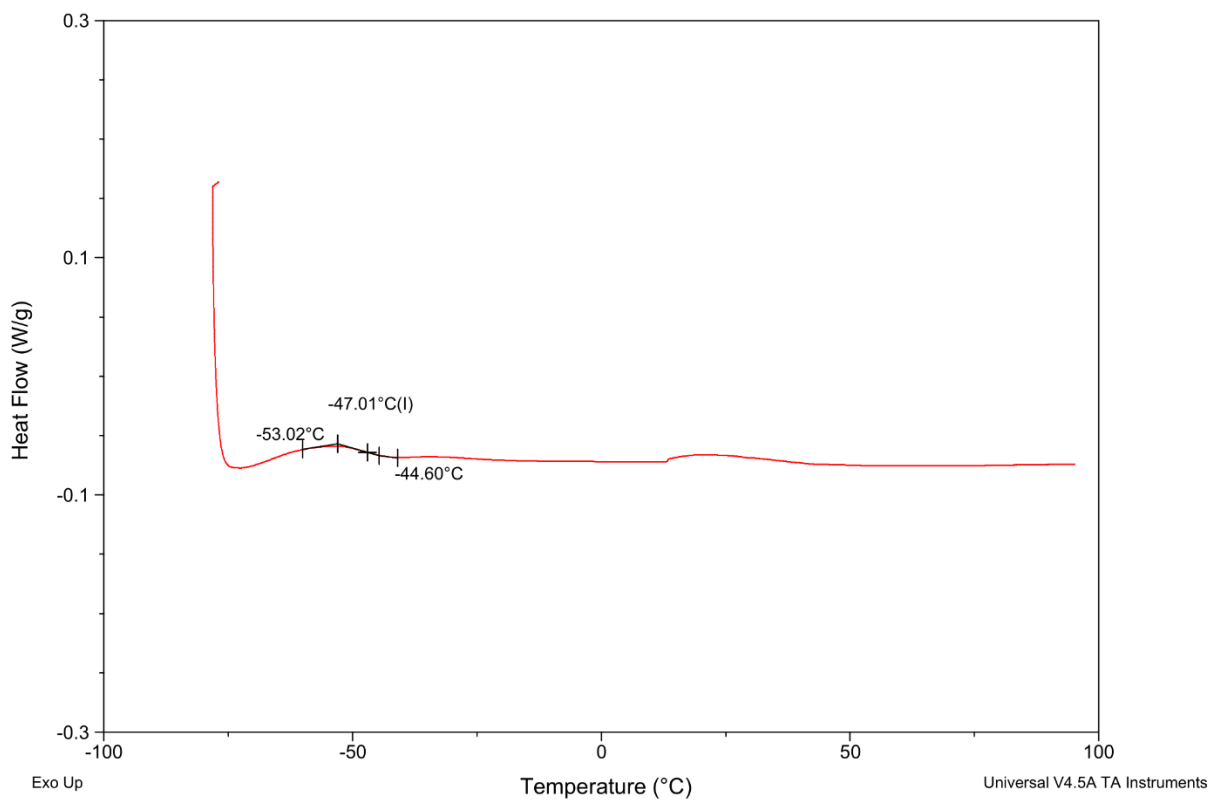


**Figure S19.** The DSC curve of TP-AlaIBU patch.

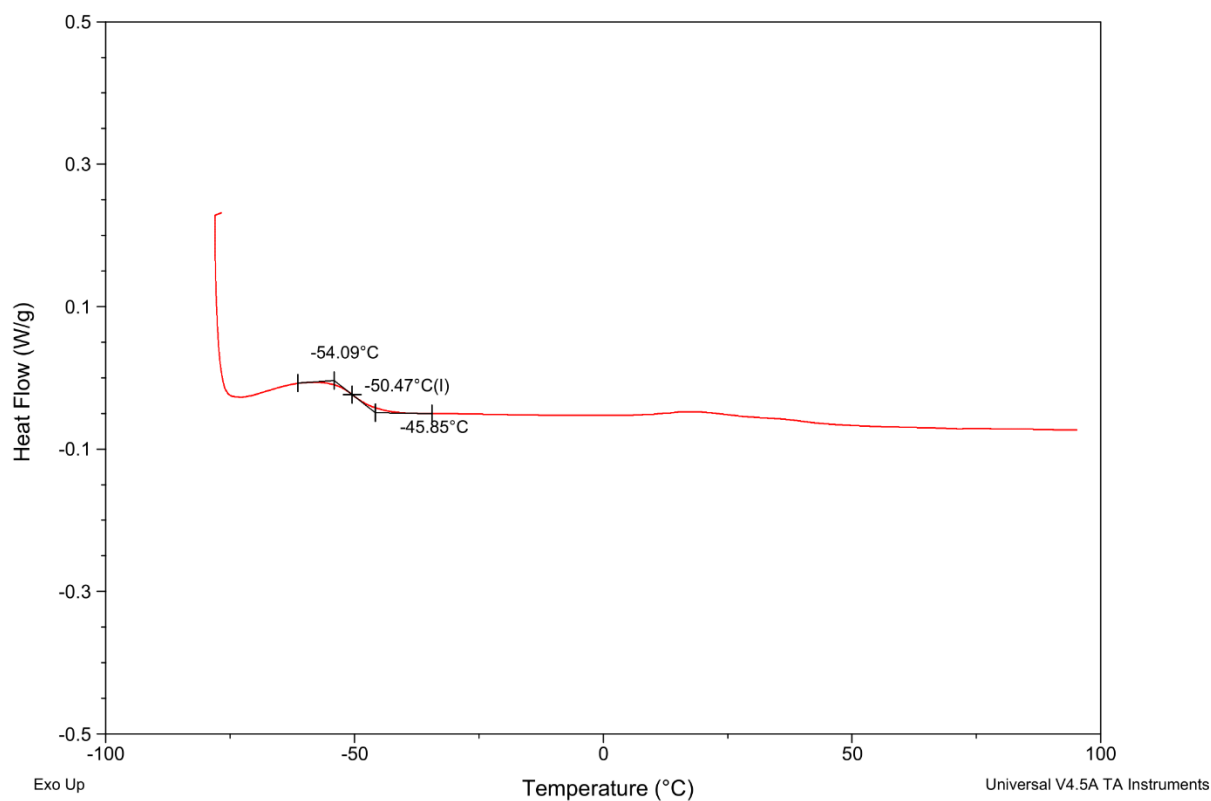




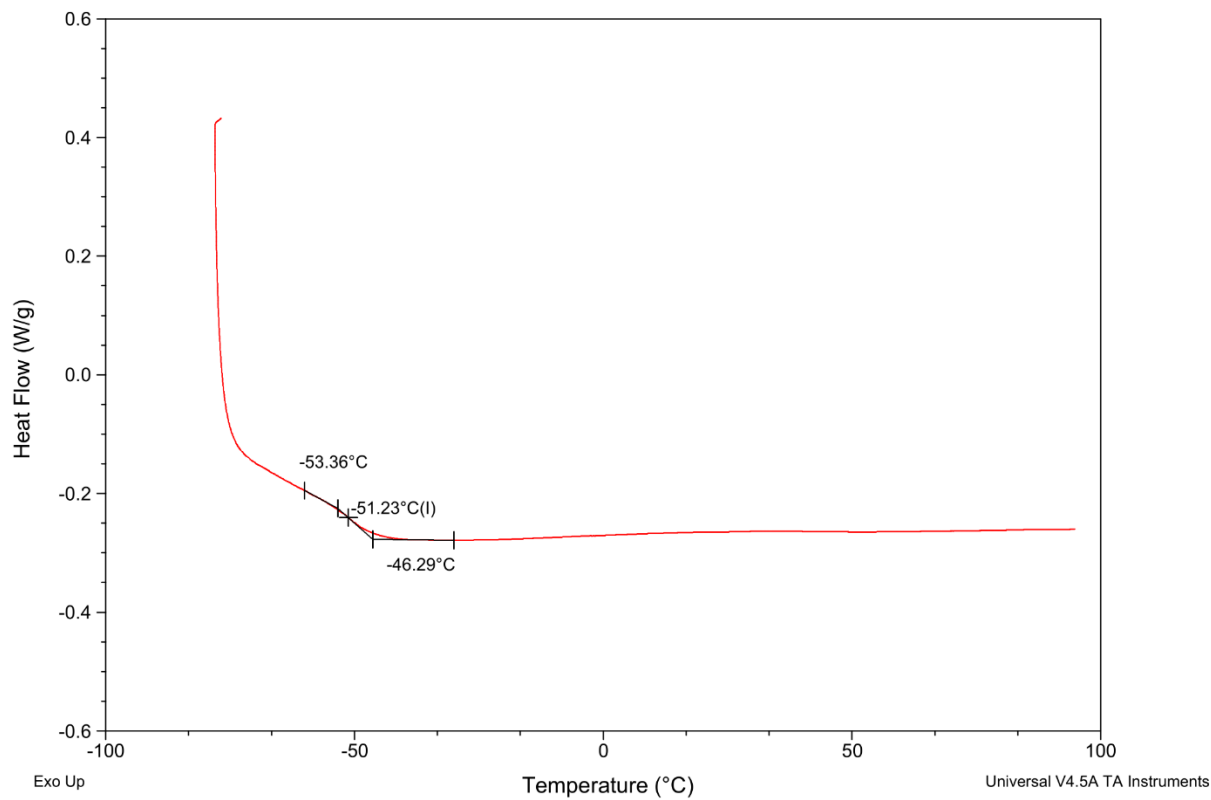
**Figure S20.** The DSC curve of TP-ValIBU patch.



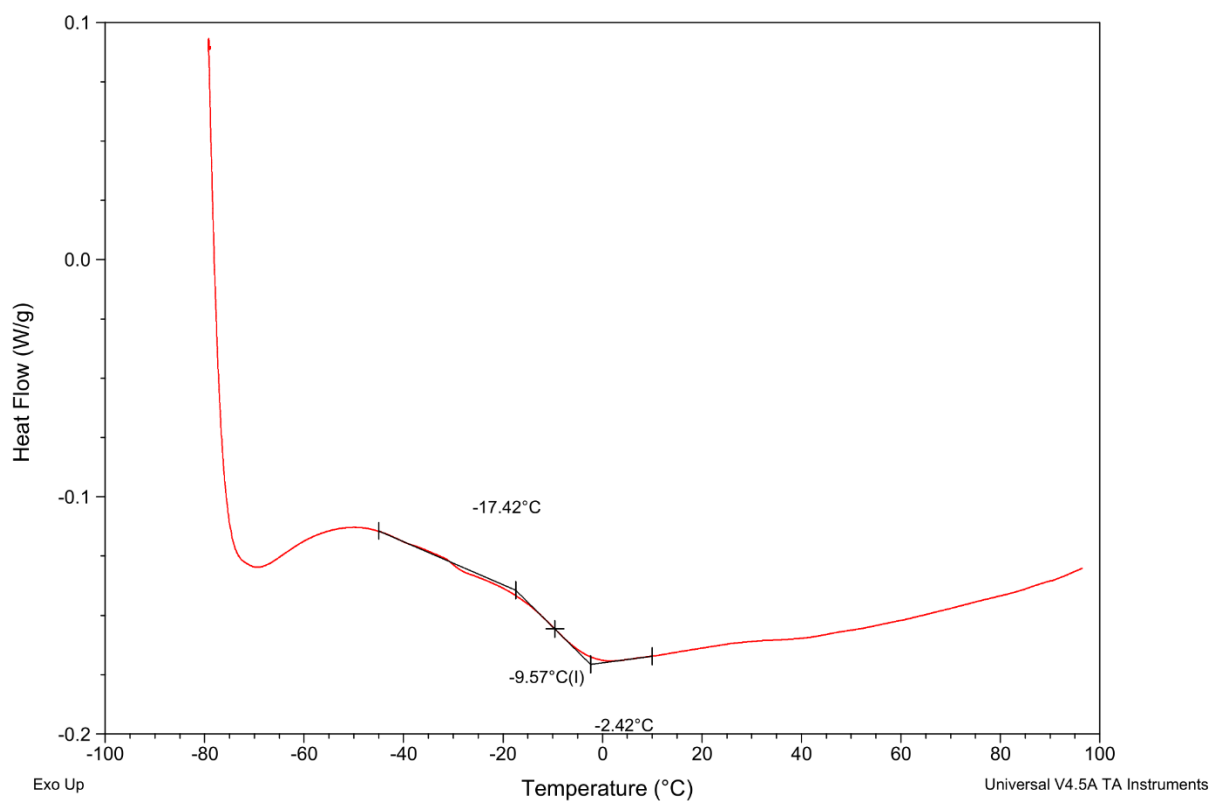
**Figure S21.** The DSC curve of TP-SerIBU patch.



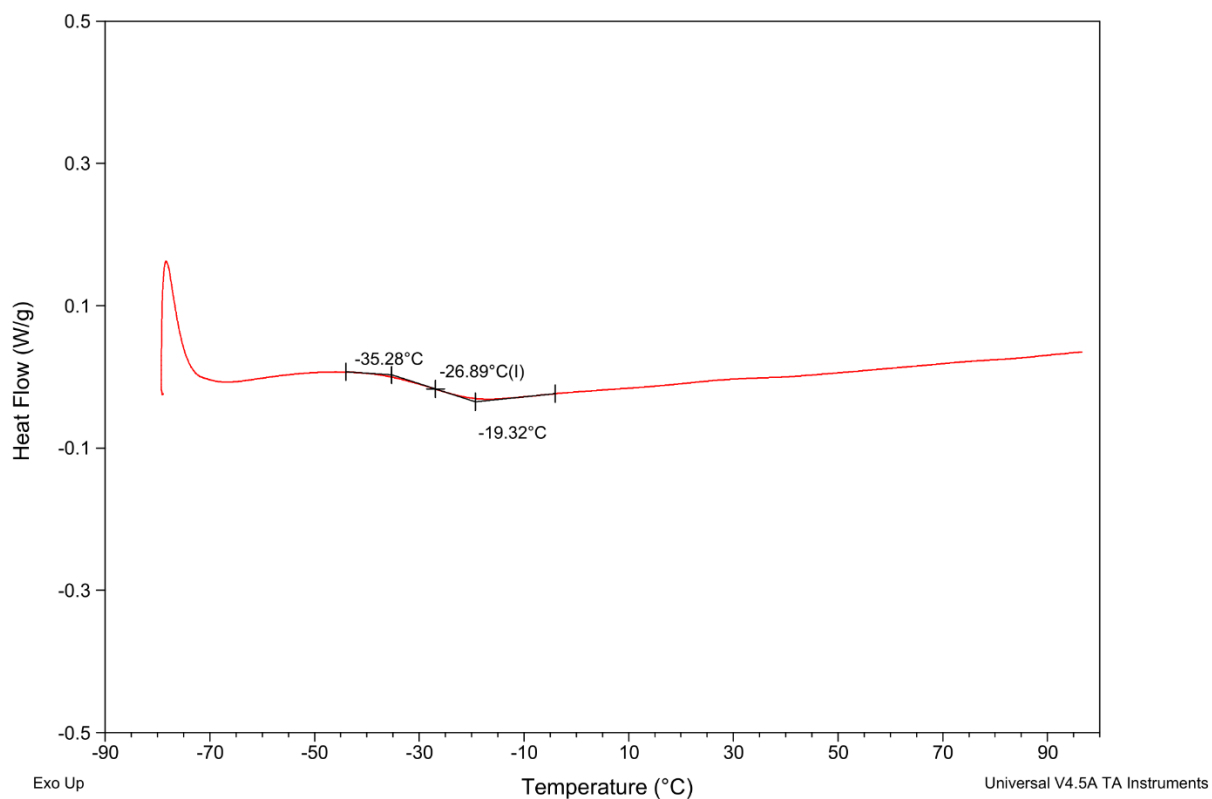
**Figure S22.** The DSC curve of TP-ThrIBU patch.



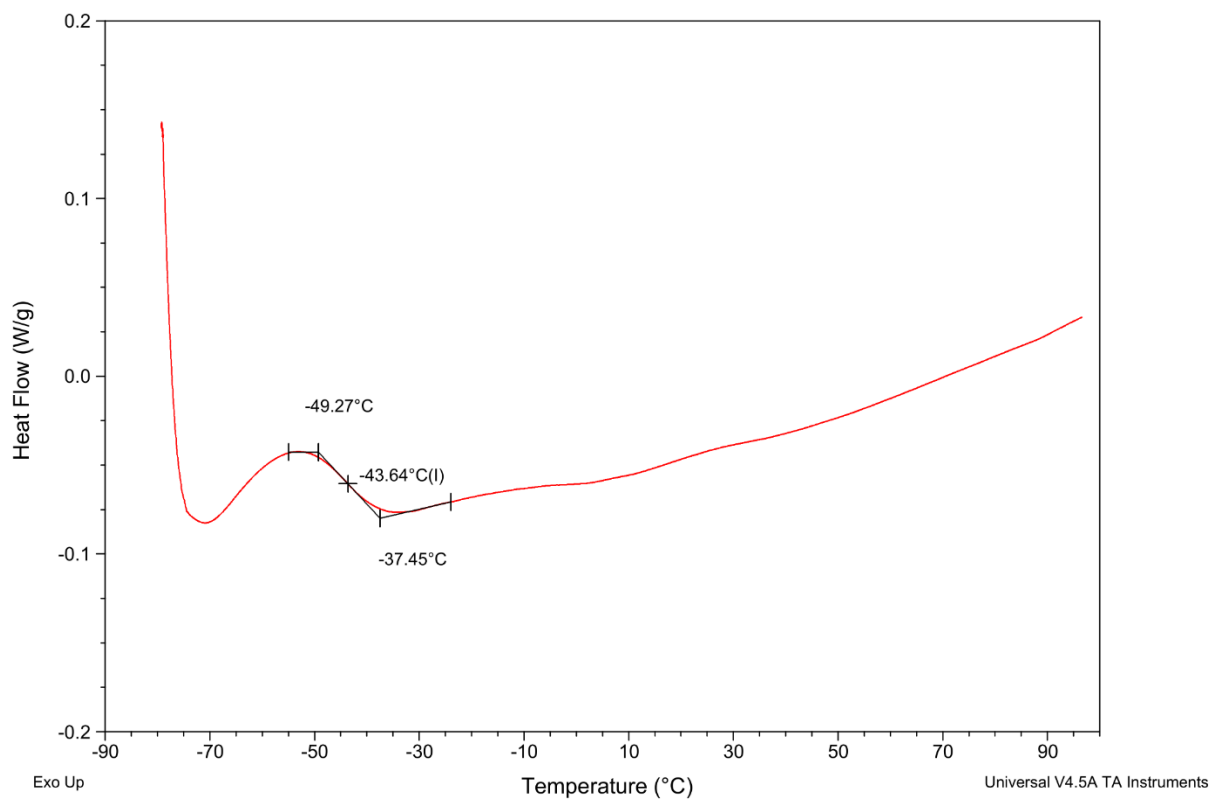
**Figure S23.** The DSC curve of TP-AspIBU patch.



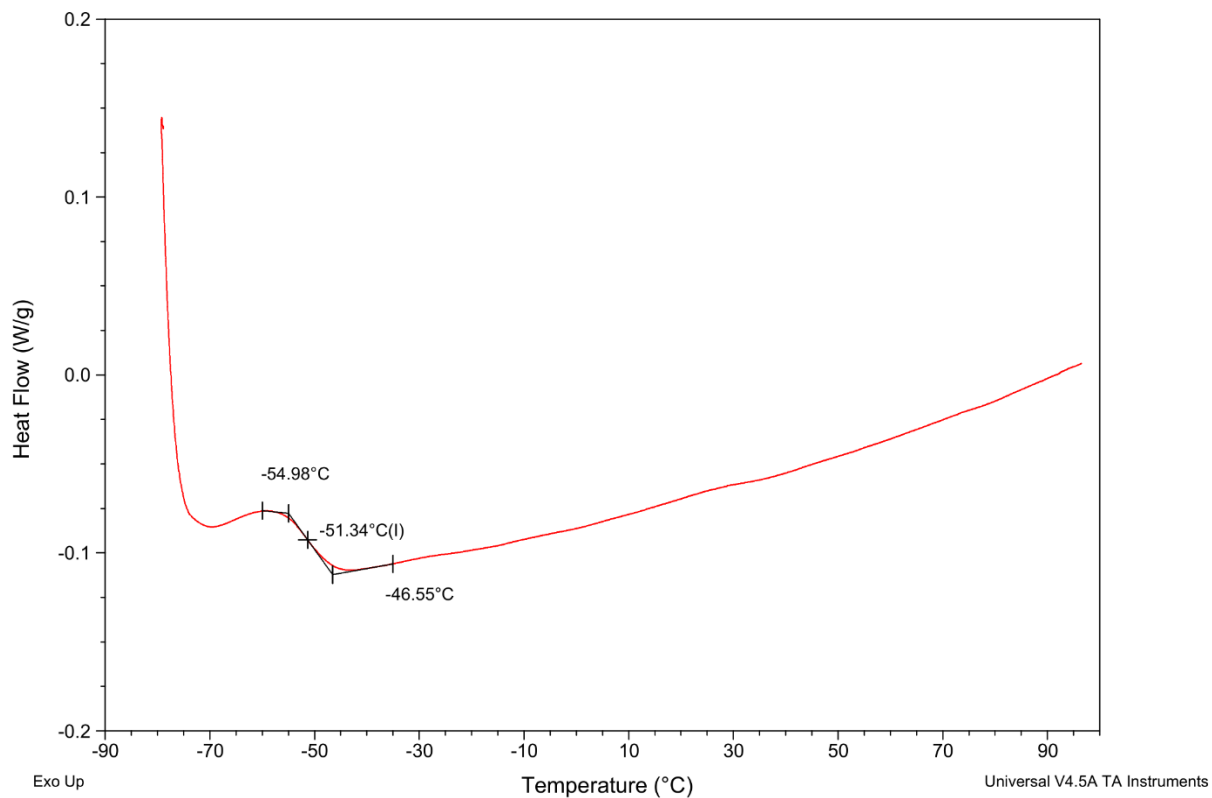
**Figure S24.** The DSC curve of TP-LysIBU patch.



**Figure S25.** The DSC curve of TP-LysIBU<sub>2</sub> patch.



**Figure S26.** The DSC curve of TP-PheIBU patch.



**Figure S27.** The DSC curve of TP-ProIBU patch.

**Table S1.** The Mann-Whitney's test estimated significant differences in the cumulative mass between all analyzed compounds, taking all time points during the entire 24 h permeation.

	TP-IBUNa	TP-GlyIBU	TP-AlaIBU	TP-ValIBU	TP-SerIBU	TP-ThrIBU	TP-AspIBU	TP-LysIBU	TP-LysIBU <sub>2</sub>	TP-PheIBU	TP-ProIBU	CP
TP-IBU	Z = 0.2787 p = 2.701	Z = 0.1605 p = 0.1562	Z = -0.7425 p = 0.6365	Z = -1.1227 p = 0.2701	Z = -1.9428 p = 0.0520	Z = -1.9428 p = 0.0520	Z = -0.8926 p = 0.3720	Z = 1.8378 p = 0.0660	Z = -2.3629 p = 0.0181*	Z = -1.7328 p = 0.0831	Z = -0.6826 p = 0.4948	Z = -0.2625 p = 0.7928
TP-IBUNa		Z = -1.8378 p = 0.0660	Z = -1.3127 p = 0.1892	Z = -1.7328 p = 0.0831	Z = -2.4679 p = 0.0135*	Z = -2.2579 p = 0.0239*	Z = -1.5228 p = 0.1278	Z = -2.1529 p = 0.0278*	Z = -2.5730 p = 0.0100*	Z = -2.3629 p = 0.0181*	Z = -1.4177 p = 0.1562	Z = -1.2077 p = 0.2271
TP-GlyIBU			Z = 0.3675 p = 0.7131	Z = 0.1575 p = 0.8748	Z = -1.1027 p = 0.2701	Z = -1.1027 p = 0.2701	Z = 0.4725 p = 0.6365	Z = -1.2077 p = 0.2271	Z = -1.7328 p = 0.0831	Z = -0.5776 p = 0.5635	Z = 0.6826 p = 0.4948	Z = 1.1027 p = 0.2701
TP-AlaIBU				Z = -1.1575 p = 0.8748	Z = -1.4177 p = 0.1562	Z = -1.3127 p = 0.1892	Z = -0.8926 p = 0.3720	Z = -1.3127 p = 0.1892	Z = -1.7328 p = 0.0831	Z = -1.1027 p = 0.2071	Z = 0.1575 p = 0.8748	Z = 0.4725 p = 0.6365
TP-ValIBU					Z = -1.3127 p = 0.1892	Z = -1.2077 p = 0.2271	Z = 0.3675 p = 0.7131	Z = -1.3127 p = 0.1892	Z = -1.6278 p = 0.1035	Z = 0.8926 p = 0.3720	Z = 0.5776 p = 0.5635	Z = 0.9977 p = 0.3184
TP-SerIBU						Z = 0.1575 p = 0.8748	Z = 1.4177 p = 0.1562	Z = 0.0525 p = 0.9581	Z = 0.7876 p = 0.4308	Z = 0.6826 p = 0.4948	Z = 1.4177 p = 0.1562	Z = 1.9428 p = 0.0520
TP-ThrIBU							Z = 1.1212 p = 0.1892	Z = -0.1575 p = 0.8748	Z = 0.9977 p = 0.3184	Z = 0.4725 p = 0.6365	Z = 1.3127 p = 0.1892	Z = 1.8378 p = 0.0660
TP-AspIBU								Z = -1.4177 p = 0.1562	Z = -1.7328 p = 0.0831	Z = -1.1027 p = 0.2071	Z = -0.3675 p = 0.7131	Z = 0.6826 p = 0.4948
TP-LysIBU									Z = -0.5776 p = 0.5635	Z = 0.4725 p = 0.6365	Z = 1.4117 p = 0.1562	Z = 1.8378 p = 0.0660
TP-LysIBU <sub>2</sub>										Z = 1.2077 p = 0.2771	Z = 1.9428 p = 0.0520	Z = 2.2579 p = 0.0239*
TP-PheIBU											Z = 1.2077 p = 0.2771	Z = 1.7328 p = 0.0831
TP-ProIBU												Z = 1.7328 p = 0.0831