

# Solvent-Free Method for the Copolymerization of Labile Sugar-Derived Building Blocks into Polyamides

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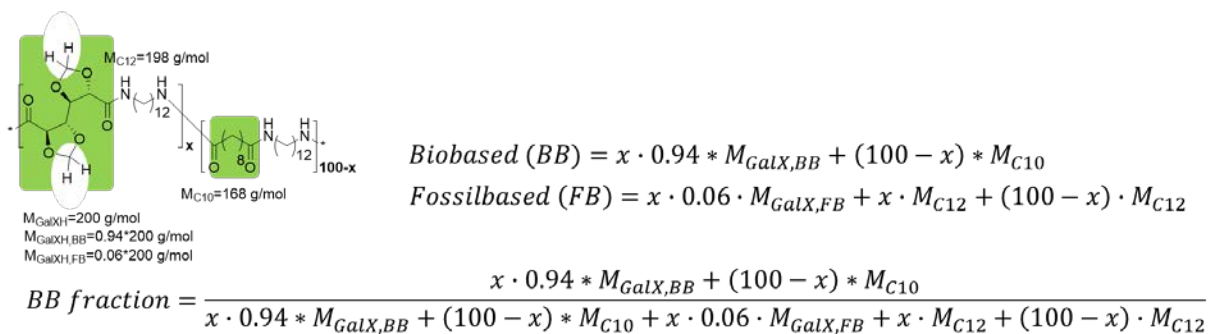
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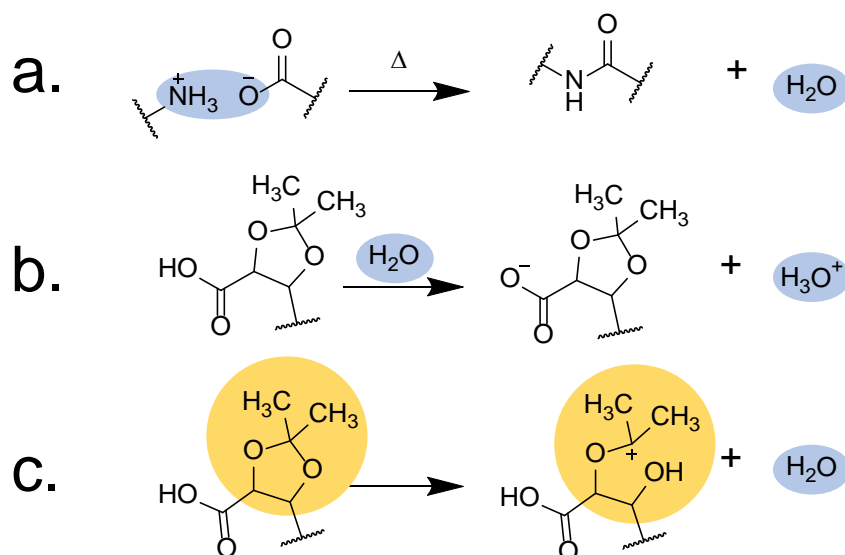
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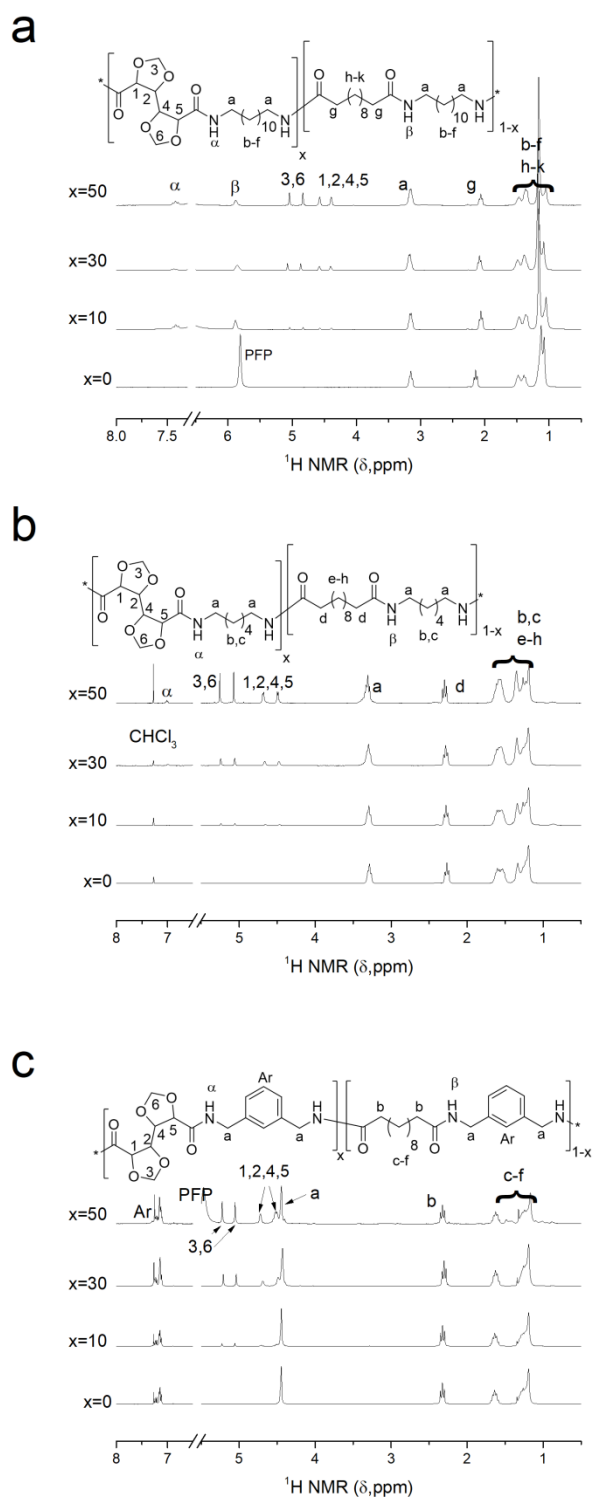
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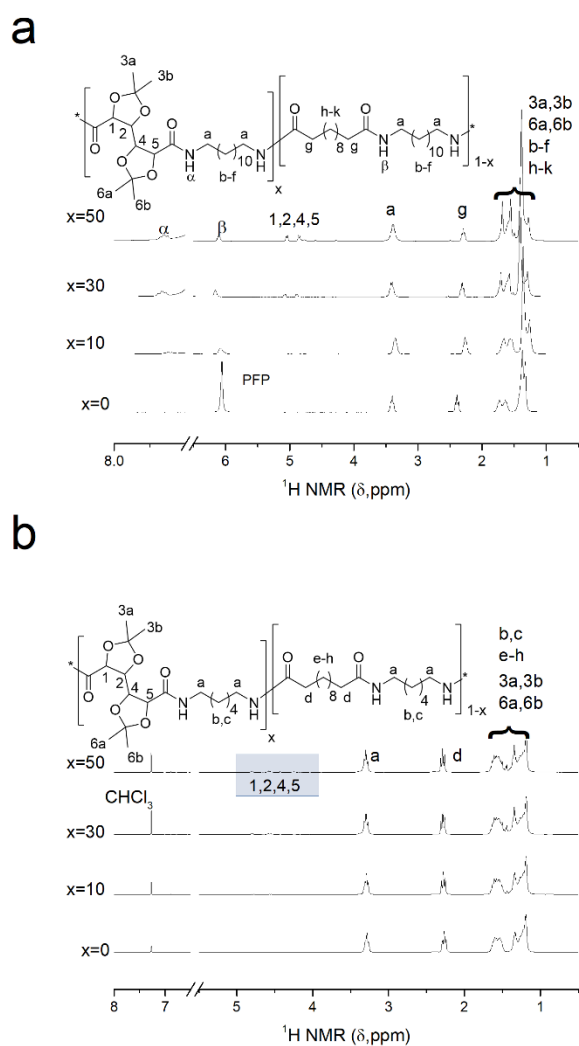
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**Figure S2** A scheme representing the internally induced hydrolysis of GalX molecules a. the formation of water during salt polymerization b. generation of protons and c. the formation of a stable carbocation from GalXMe.



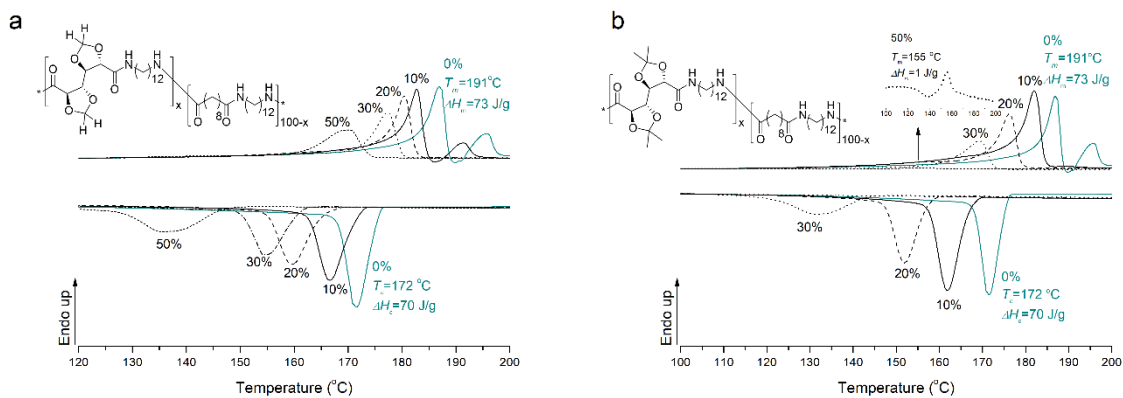
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**Table S1** Melting temperatures (melting point measurement) of the prepared salts.

Salt composition	$T_m$ [°C]	Salt composition	$T_m$ [°C]	Salt composition	$T_m$ [°C]
C12,C10	160	C12, GalXH	247	C12, GalXMe	221
C6,C12	191	C6, GalXH	272	C6, GalXMe	261
MXD,C12	131	MXD, GalXH	242	MXD, GalXMe	255

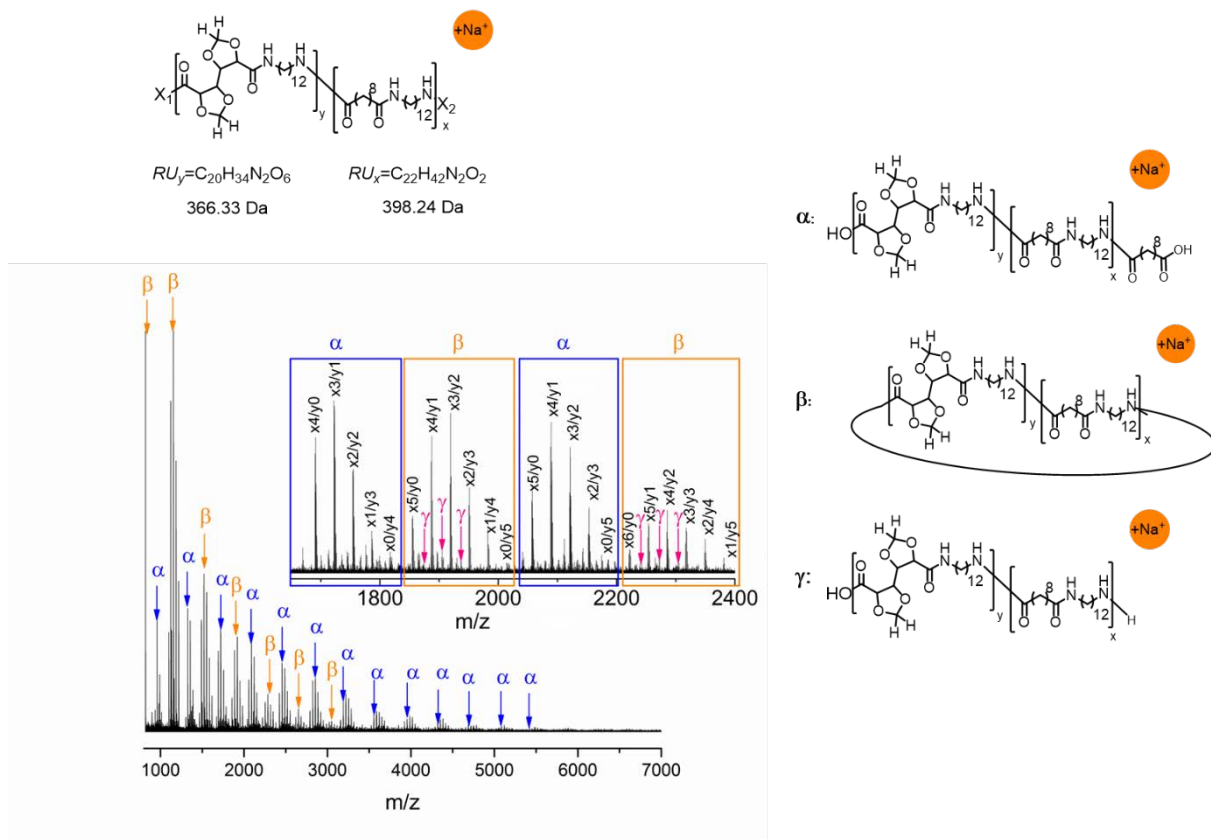


**Figure S5** Typical DSC plots obtained for a. PA(12, GalXH)<sub>x</sub>-co-PA(12, 10)<sub>100-x</sub> and b. PA(12, GalXMe)<sub>x</sub>-co-PA(12, 10)<sub>100-x</sub>, representing the influence of the GalX content (indicated as % in the figure above) on the melting point and crystallinity of copolymers.

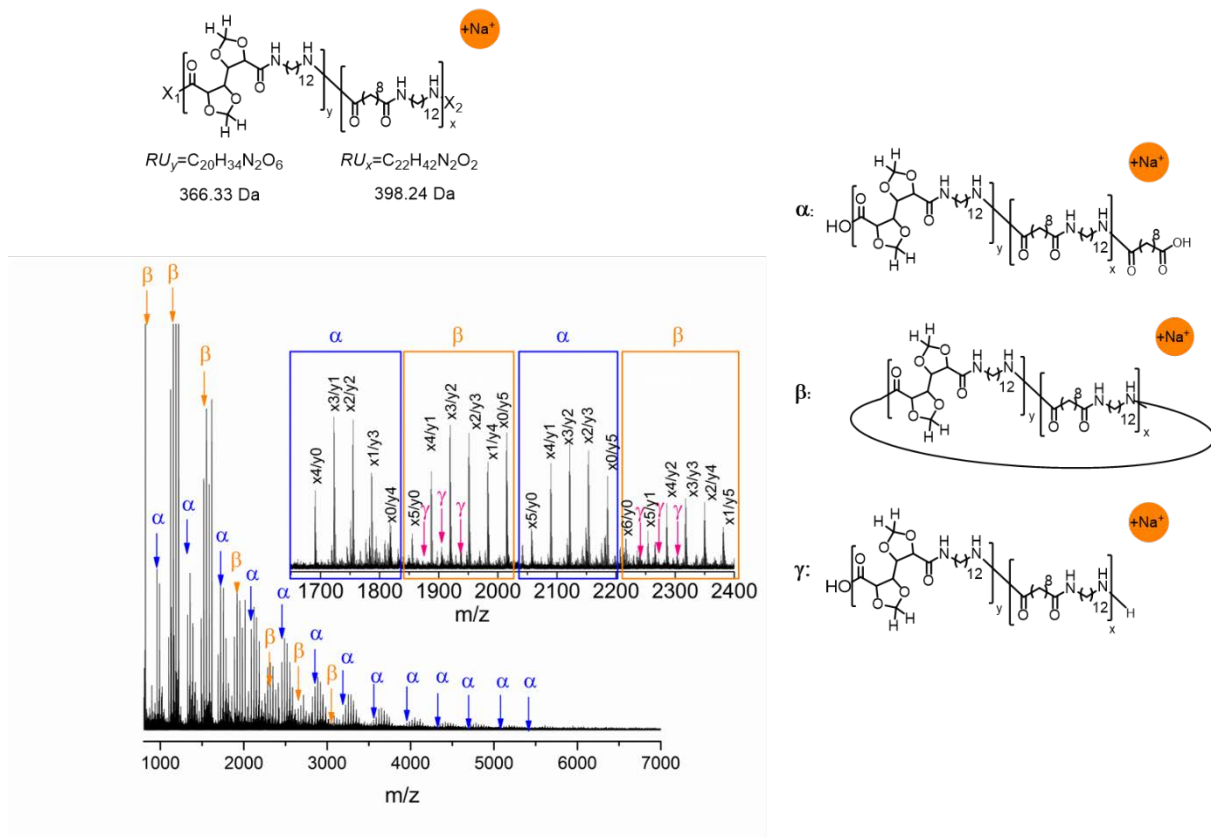
**Table S2** Low molecular weight GalX polyamides for MALDI-TOF analysis

Copolymer	$M_n^{(a)}$ [kg·mol <sup>-1</sup> ]	$\bar{D}^{(a)}$
PA(12, GalXH) <sub>30</sub> -co-PA(12, 10) <sub>70</sub>	8.1	2.6
PA(12, GalXH) <sub>50</sub> -co-PA(12, 10) <sub>50</sub>	7.4	2.7
PA(12, GalXMe) <sub>30</sub> -co-PA(12, 10) <sub>70</sub>	11.6	8.7
PA(6, GalXMe) <sub>30</sub> -co-PA(6, 12) <sub>70</sub>	5.5	5.3

(a) Molecular weight of the polyamides determined by GPC,  $\bar{D}$  – dispersity



**Figure S6** MALDI-TOF spectrum of PA(12,GalXH)<sub>30</sub>-CO-PA(12,10)<sub>70</sub> ( $M_{n,GPC}=8.1$  kg/mol,  $D=2.6$ ).

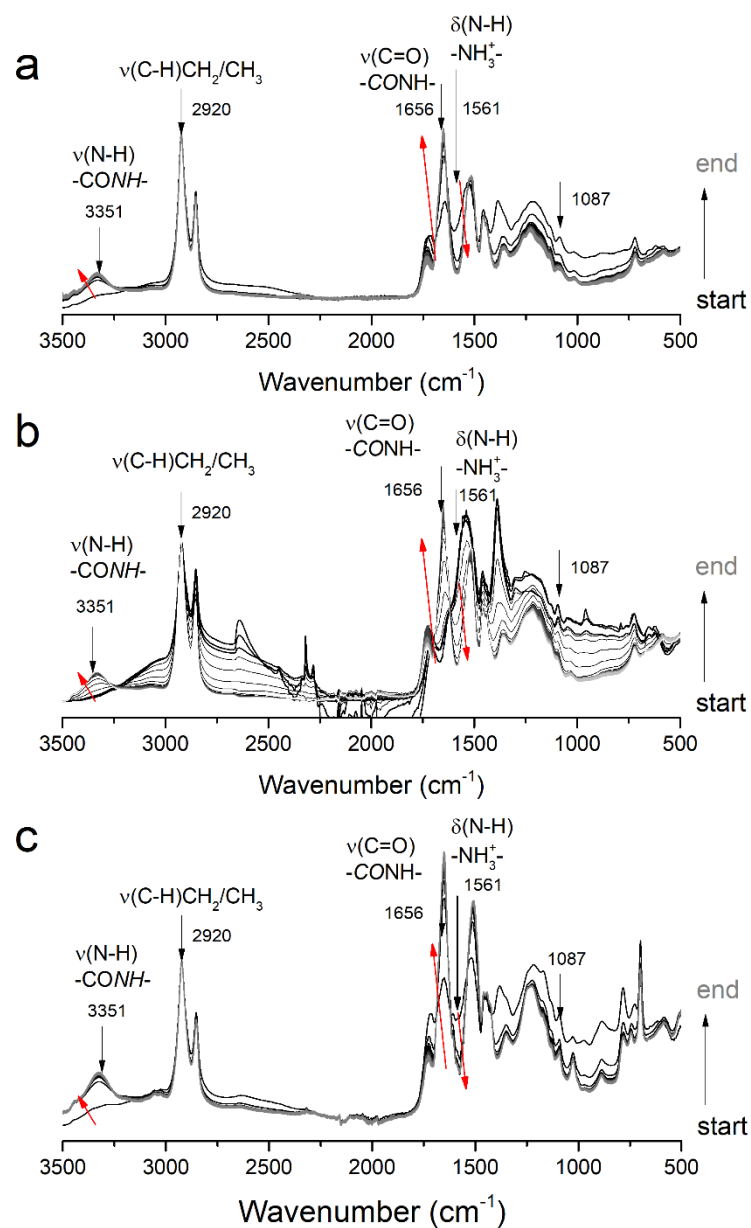


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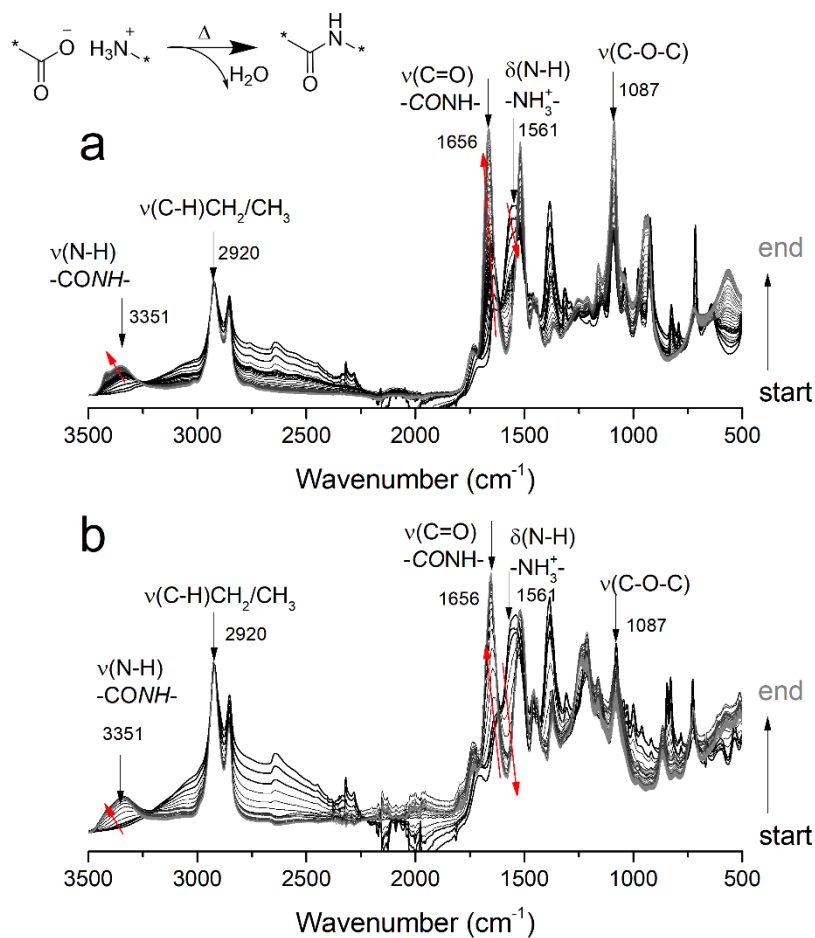




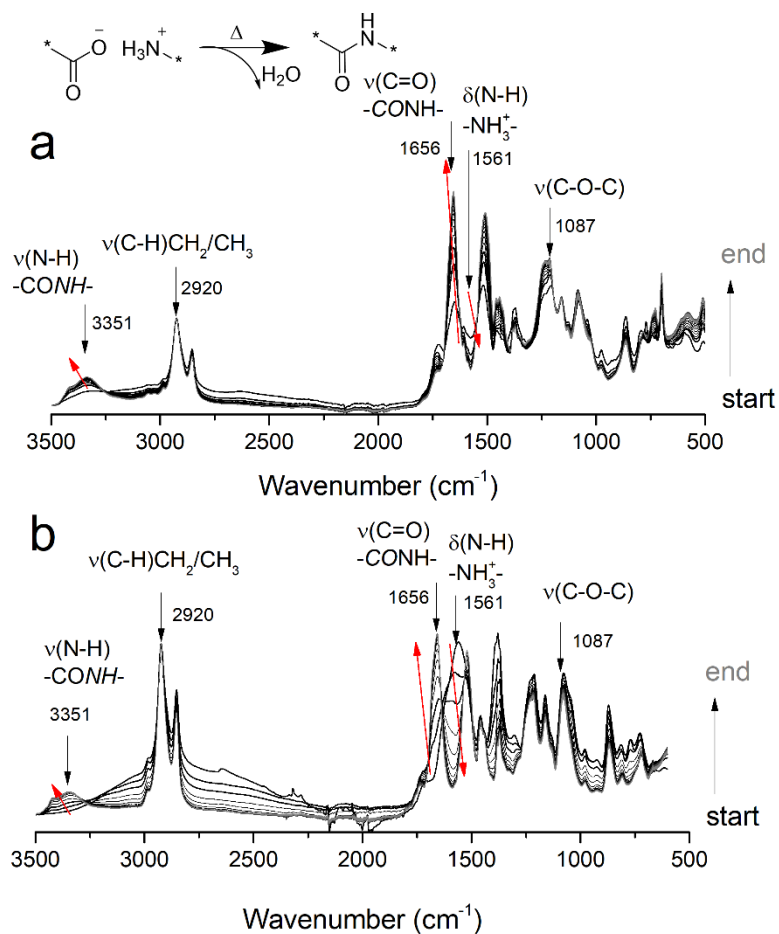




**Figure S10** Time depended FT-IR spectrum recorded for reaction of (a) C12,C10 salt, (b) C6,C12 salt and (c) MXD,C12 salt.  $\delta$  – bending (scissoring),  $\nu$  – stretching vibration. Red arrows indicate the development of the signal along the reaction coordinates.



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