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Supporting Information

Towards Sugar-Derived Polyamides as Environmentally Friendly Materials

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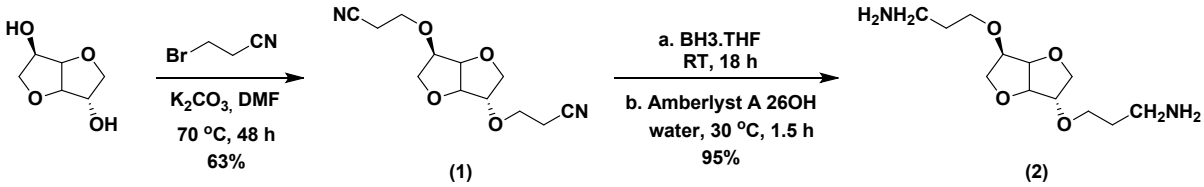

Scheme S1. Sytnthesis of 3,3'-(((3R,6S)-hexahydrofuro[3,2-b]furan-3,6-diyl)bis(oxy))-bis(propan-1-amine) —isosorbide(bis(propan-1-amine)).

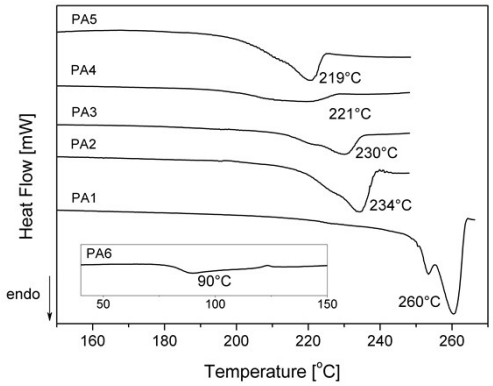

Figure S1. DSC traces of the second heating run of the co- and homopolyamides with different contents of diaminoisosorbide and diaminoisoidide.

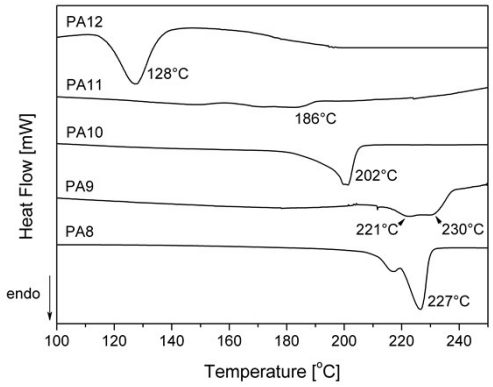

Figure S2. DSC traces of the second heating run of the co- and homopolyamides consisting of suberic acid, 1,4-diaminobutane, 1,6-diaminohexane and diaminopropyloisosorbide.

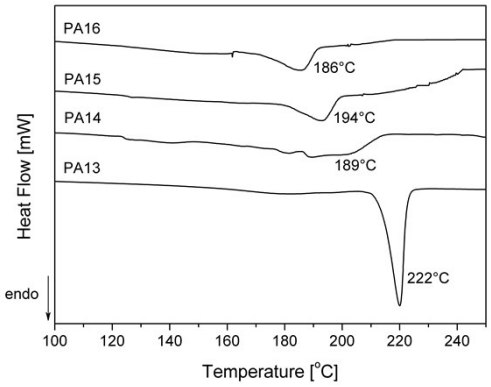

Figure S3. DSC traces of the second heating run of the co- and homopolyamides consisting of sebacic acid, 1,4-diaminobutane, 1,6-diaminohexane and diaminopropyloisosorbide.

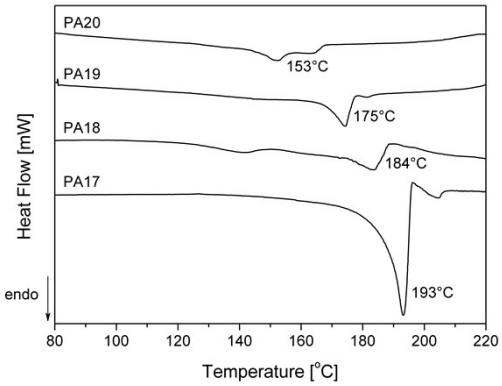

Figure S4. DSC traces of the second heating run of the co- and homopolyamides consisting of brasylic acid, 1,4-diaminobutane, 1,6-diaminohexane and diaminopropyloisosorbide.

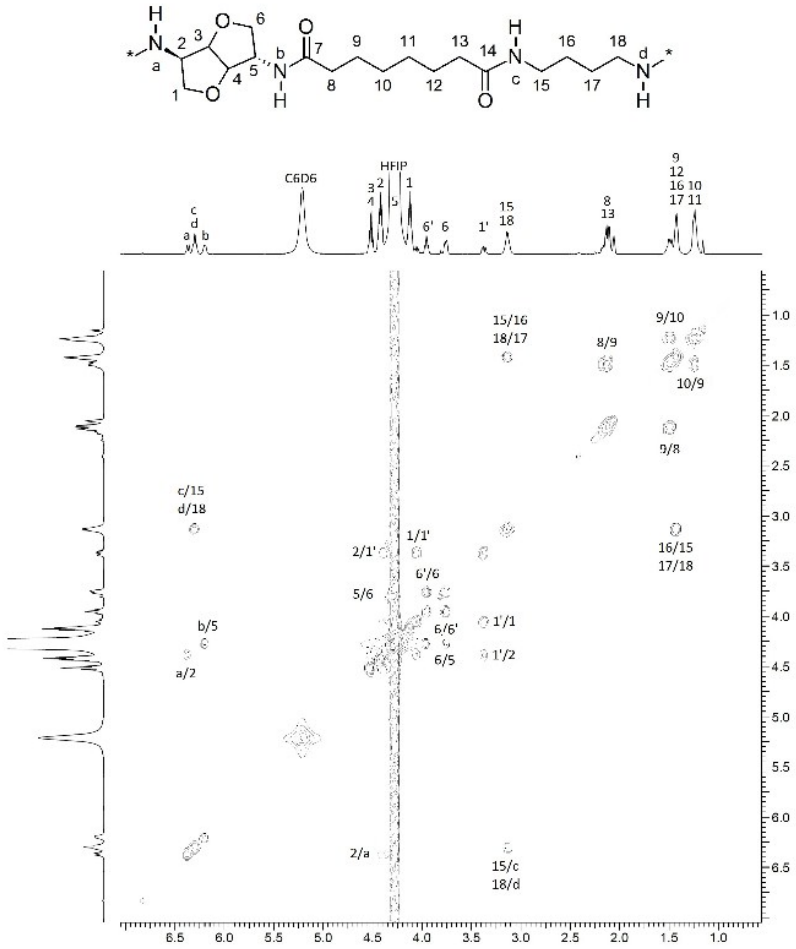

Figure S5. 500 MHz Correlation Spectra COSY of PA5.

Table S1. Assignment of FT-IR bands in the spectra recorded of PA14.

band frequencies (cm^{-1})		band assignment
SALT	PA 14	
-	3300	N-H stretch vibration; hydrogen bonded
-	3200	N-H stretch vibration; hydrogen bonded and amide (I+II) overtone
-	3075	N-H stretch vibration; hydrogen bonded and amide (II) overtone
2984	2925	CH_2 antisym. strech vibration
2913	2850	CH_2 sym. strech vibration
2832	-	N-H/NH_3^+ stretch. vibration/overtones
2636	-	N-H/NH_3^+ stretch. vibration/overtones
2538	-	N-H/NH_3^+ stretch. vibration/overtones
2384	-	N-H/NH_3^+ stretch. vibration/overtones
1634		N-H/NH_3^+ scissor vibration
1547	1629	C=O antisym. stretch vibration
-	1530	Amide II in-plane N-H deformation with CN and C=O stretch vibration
1450	1469	CH_2 scissoring not adjusted to NH_3^+ or amide group
1395	1430	C=O sym. stretch vibration
-	1413	C-H/CH_2 scissoring vibration next to C=O group with trans conformation
-	1366	Amide III, C-N stretch. and in-plain NH deformation
1300	1297	CH_2 wagging or twisting
1189	1232	C-C skeletal stretch.
-	1189	Amide II+III coupled with hydrocarbon skeleton
1115	-	C-C skeletal stretch.
1085	1115	C-O-C antisym. stretch vibration
1038	1095	C-O-C sym. stretch vibration
1007	1016	C-C stretch. vibration
878	939	C-CO stretch. vibration
620	719,679,576	N-H wagging vibration

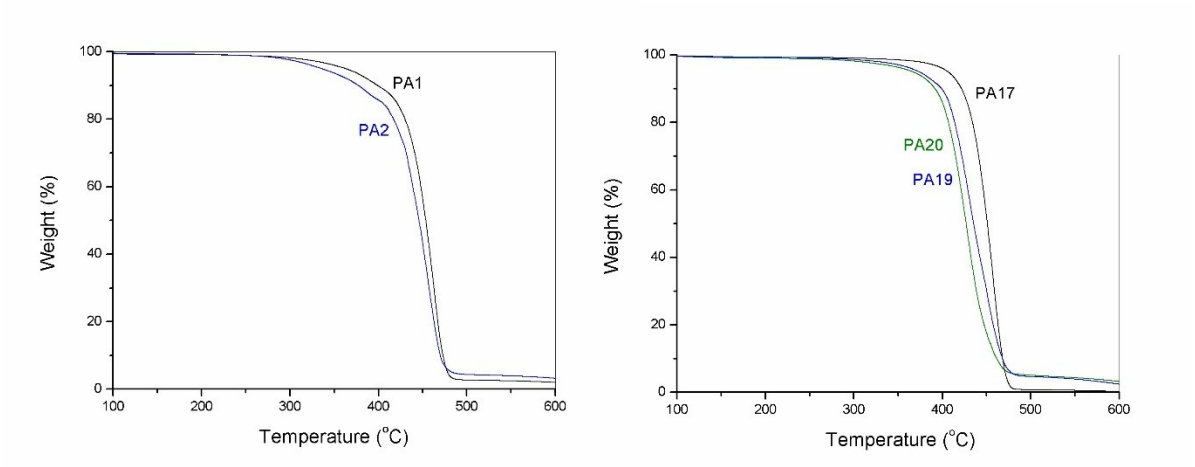

Figure S6. TGA profiles of PA 1, PA2, PA17, PA 19, PA20.

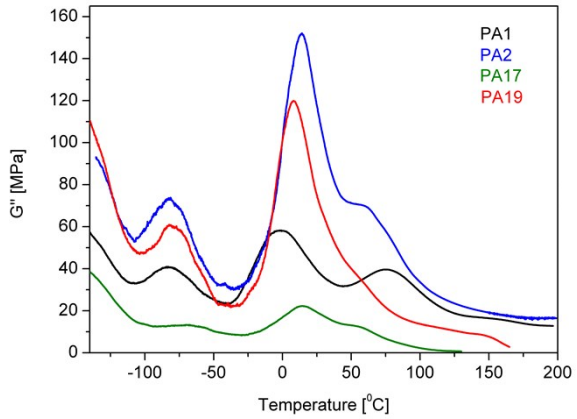

Figure S7. The loss modulus G`` as a function of temperature of PA1 (C8/DAB), PA2 (C8/DAB/30%DAIS), PA17 (C13/DAH), PA19 (C13/DAH/30%DAPIS).

Table S2. T_g values and the storage modulus G` at -25 °C and 100 °C of PA1 (C8/DAB), PA2 (C8/DAB/30%DAIS), PA17 (C13/DAH), PA19 (C13/DAH/30%DAPIS).

	T_g* [°C]	G' at -25°C [MPa]	G' at 100°C [MPa]
PA1	-1.7	1786	380
PA2	14.1	2862	279
PA17	14.3	394	21
PA19	7.8	2024	158

*deretmined from the loss modulus G``