

Supplementary information for:

**Tackling the Problem of Tendon Adhesions: Physical Barriers Prepared from  $\alpha$ -Amino Acid- Based Poly(ester amide)s**

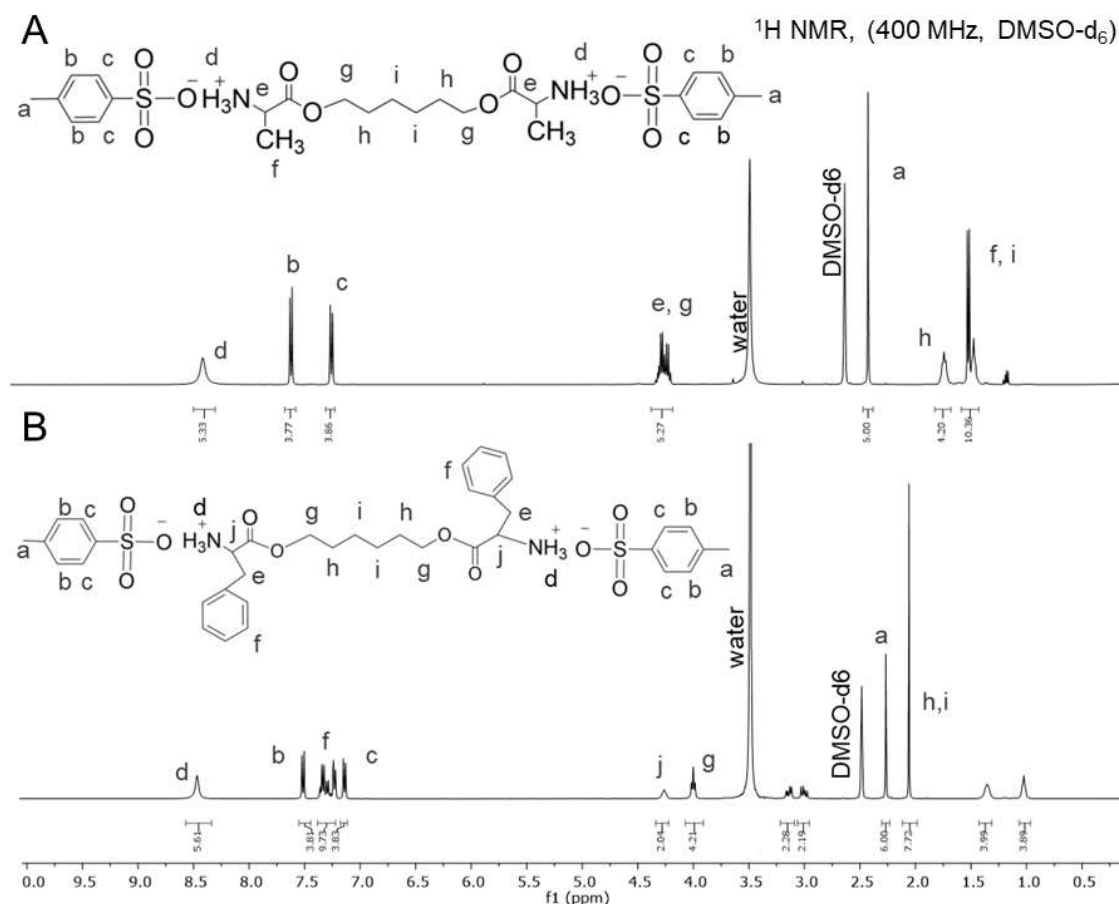
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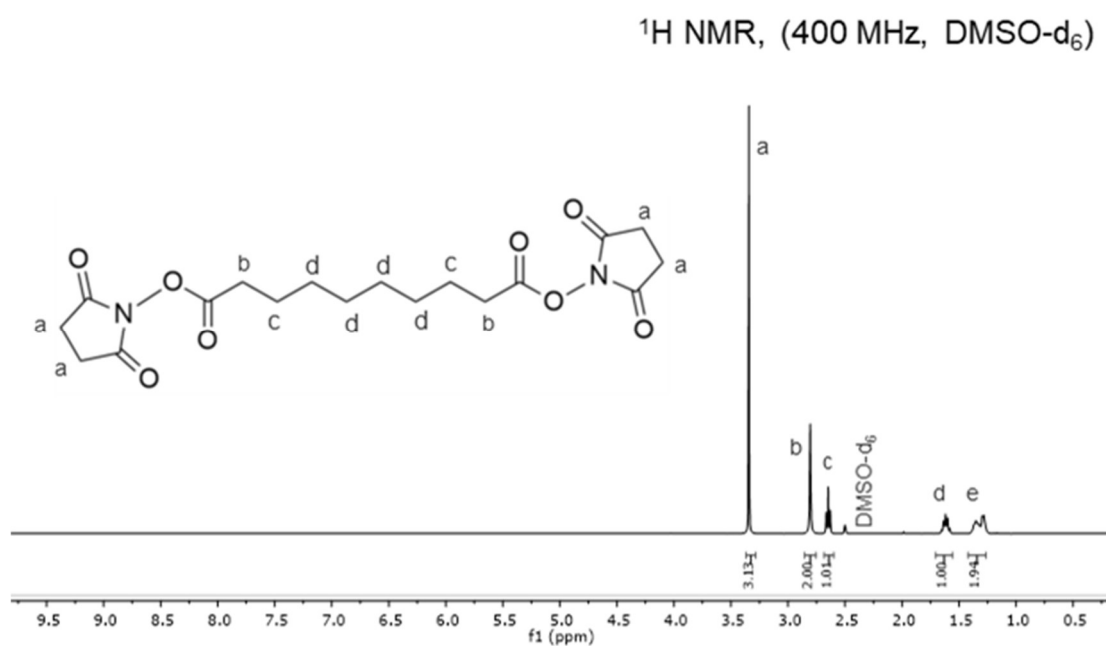


Figure S2.  $^1\text{H}$  NMR spectra of the Synthesis of the activated diester from sebacoyl chloride.

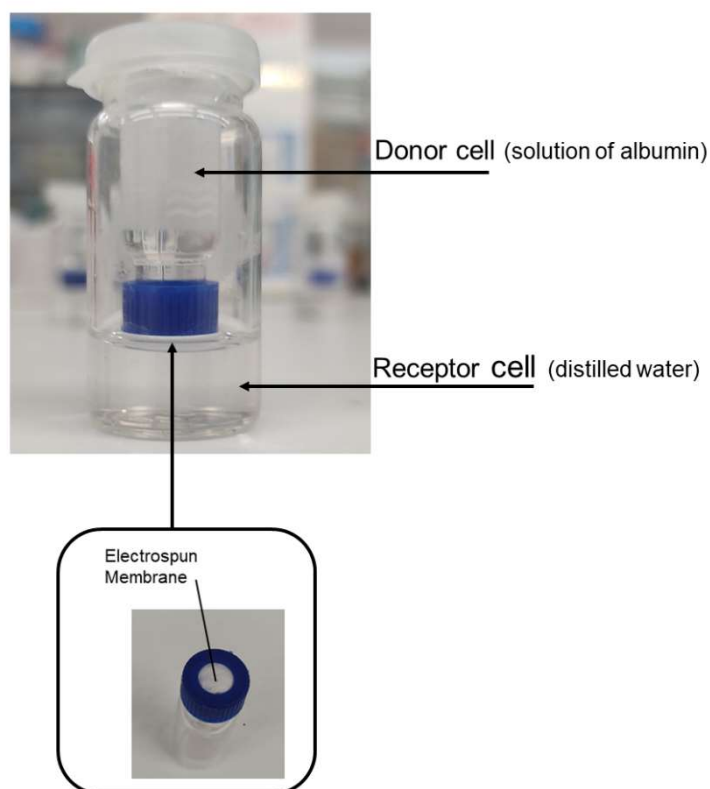


Figure S3. Permeability apparatus.

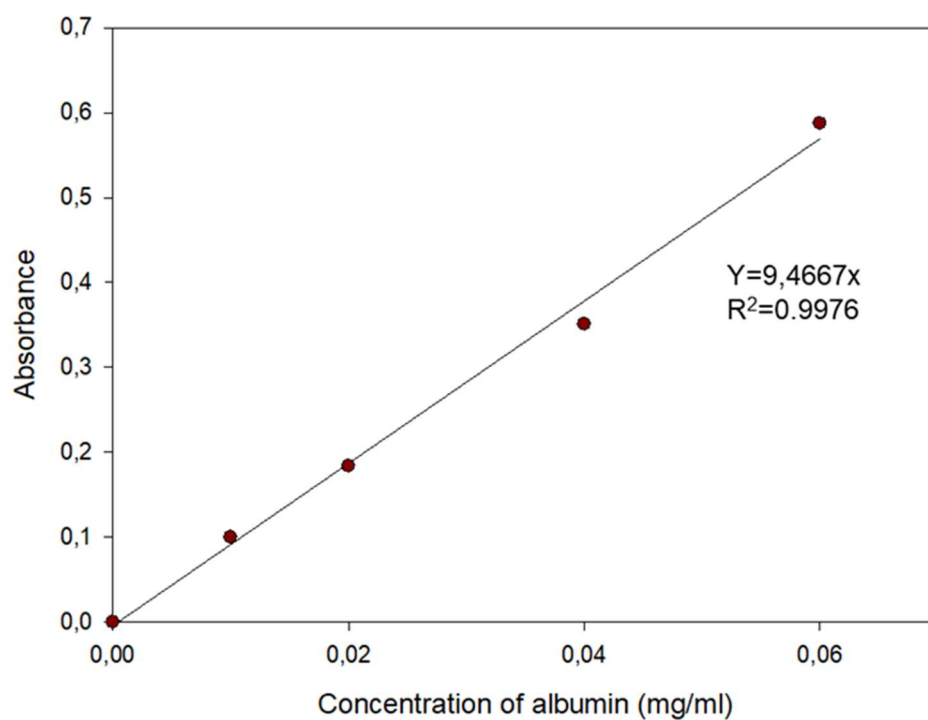


Figure S4. Calibration curve used for the permeability tests.

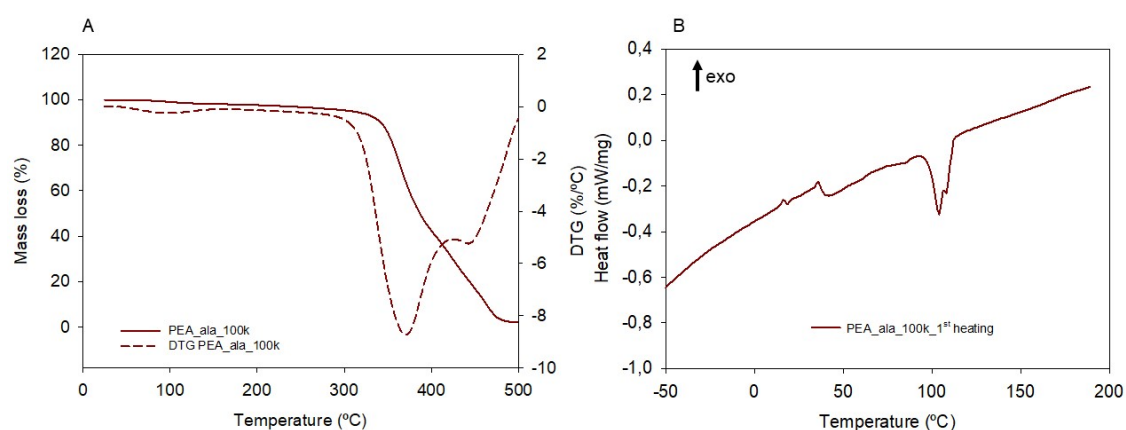


Figure S5. TGA and DTG curves of the PEA\_ala\_100k synthesized (A) and the heat flow curve of the same PEA obtained by DSC in the 1<sup>st</sup> heating (B).

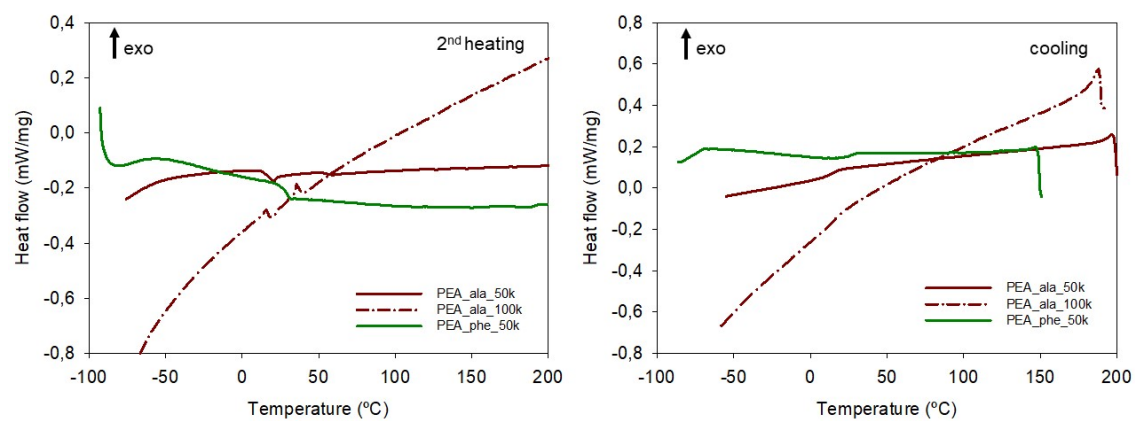


Figure S6. Heat flow of the synthesized PEAs in the second heating and cooling.

Table S1. Different parameters changed in the optimization process of the prepared membranes.

Polymer	Solvent	Concentration (%w/v)	Voltage (kV)	Collector distance (cm)	Flow rate (mL/h)	Humidity (%)	Result
PEA_ala_50K	TFE	50	20	20	0.5 mL/hr	40	Deposition in powder
	TFE	50	16-17	15	0.8 mL/hr	20	Thick and unflexible membrane
	TFE	20	17	10	0.5 mL/hr	20	Membrane (wout/defined fibers in SEM)
PEA_ala_100k	TFE	35	16	12	0.5 mL/hr	20	Membrane with defects
	TFE	30	17	12	0.5 mL/hr	20	Membrane with defects
PEA_phe_50k	TFE	25	24	12	0.5 ml/hr	20	Membrane (wout/defined fibers in SEM)
	TFE	15	15.5	12	0.5 ml/hr	20	Membrane (wout/defined fibers in SEM)
	TFE	30	17	15	0.5 ml/hr	20	Membrane with defects
PEA_ala_50k/ PEA_phe_50k (50:50)	TFE	20	14	12	0.5 mL/hr	30	Membrane with defects
	TFE	20	15	12	0.5 mL/hr	30	Membrane with defects
	TFE	20	16	12	0.5 mL/hr	30	Membrane with defects
	TFE	20	15.5	12	0.5 mL/hr	30	Membrane with defects
	TFE	20	17	12	0.5 mL/hr	30	Membrane with defects
PEA_ala_50k/ PEA_phe_50k (75:25)	TFE	20	15.5	12	0.5 mL/hr	30	Membrane with defects
PEA_ala_50k/ PEA_phe_50k (25:75)	TFE	20	15	12	0.5 mL/hr	30	Membrane with defects
	TFE	20	17	12	0.5 mL/hr	30	Membrane with defects

Table S2. Tensile strength, elongation at break, elastic modulus and toughness of the electrospun membranes.

	<b>Tensile strength (MPa)</b>	<b><math>\epsilon</math> (%)</b>	<b>E (MPa)</b>	<b>Toughness (J/cm<sup>3</sup>)</b>
<b>PEA_ala_100k</b>	7.2 ±1.51	186.44 ±49.56	79.38±21.83	1012.64±49.82
<b>PEA_ala_50k</b>	2.61±0.92	38.17±6.69	15.99±4.77	76.46±38.58
<b>PEA_ala_50k/PEA_phe_50k (50:50)</b>	18.42±1.30	43.34±1.17	261.94±29.36	586.02±100.38
<b>PEA_ala_50k/PEA_phe_50k (25:75)</b>	33.21±4.25	19.46±5.45	693.87±16.23	671.7±282.99