Supporting Information for

EFFECT OF POLYELECTROLYTE MOLECULAR WEIGHT ON THE FORMATION AND PROPERTIES OF POLYELECTROLYTE MULTILAYERS

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This SI file includes: 1) Description of ATR-FTIR spectroscopy measurements
2) Figures
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1) ATR-FTIR spectroscopy

An FT-IR spectrometer VECTOR 22 from Bruker equipped with a MIRacle ATR sampling accessory (PIKE Technologies) was used to record infrared spectra. Solid polyelectrolyte samples were recorded on a reflection element made of diamond, under the pressure of the support clamp. The spectrum of air was used as a background when recording samples. The FT-IR spectra were recorded by the single reflection of radiation in the range between 4000 and 600 cm^{-1} with 32 scans at 4 cm^{-1} resolution. The recorded spectra were corrected by the ATR algorithm in the OPUS 6.0 program, taking into account the angle of incidence of the beam (45°) and the surface material of the reflective element (diamond).

Obtained FT-IR spectra of PAH and PAA before and after drying are shown in figure S1. In tables S1 and S2 assignments of IR bands are depicted. It can be concluded that drying process removed most of the sorbed water from the polymers, as indicated by an intensity decrease of a broad IR band centered at around 3400 cm^{-1}.

2) Figures

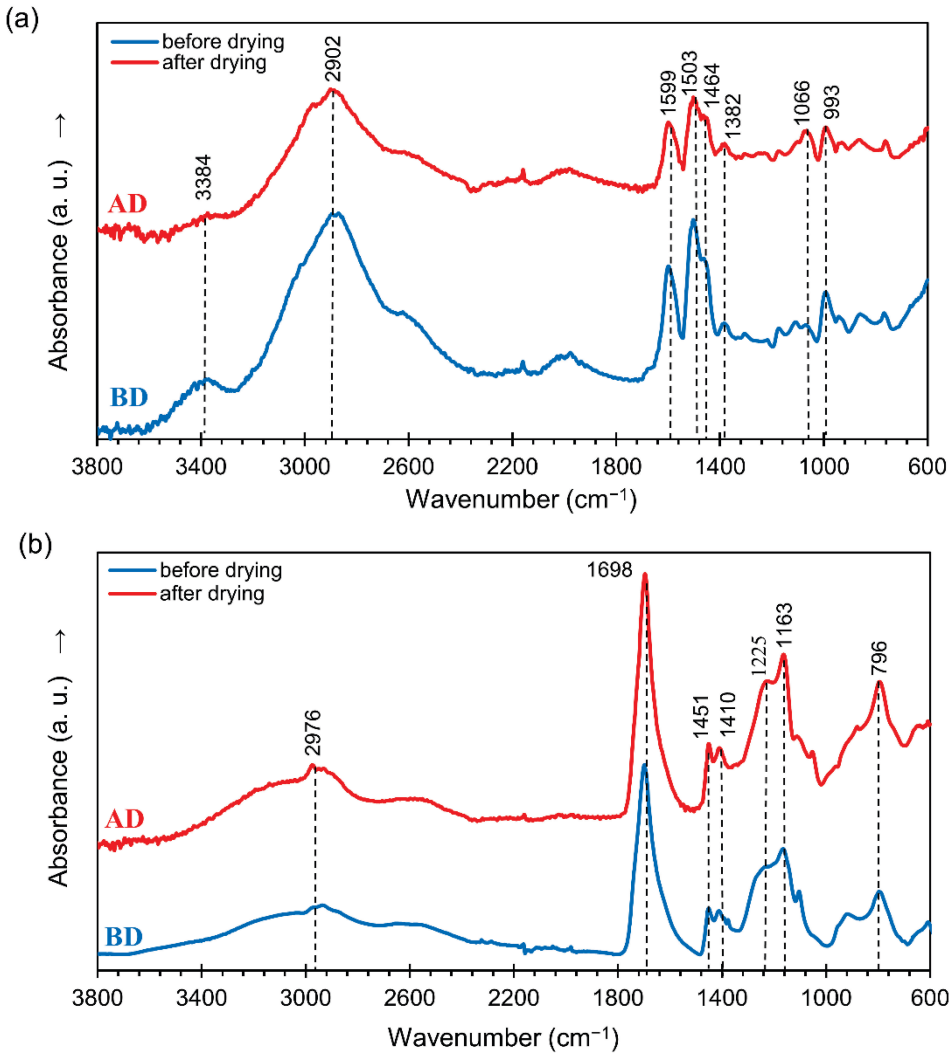

Figure S1. ATR-FTIR spectra of PAH (a) and PAA (b) before (BD) and after (AD) drying the polymers at 60 °C for 200 min. The wavenumbers of the IR bands are marked on the spectra.

3) Tables

Table S1. Observed wavenumbers and assignments of IR bands of PAH. The assignments are supported by the literature sources.[1-3]

Wavenumber (cm^{-1})	Assignments
3384	O−H stretching
2902	$N-H^+$ and C−H stretching
1599	antisymmetric NH_3^+ bending
1503	symmetric NH_3^+ bending
1464	CH_2 bending
1382	CH_3 bending
1066, 993	C−N stretching

Table S2. Observed wavenumbers and assignments of IR bands of PAA. The assignments are supported by the literature source.[4]

Wavenumber (cm^{-1})	Assignments
2500−3600	O−H and C−H stretching
1698	C=O stretching
1451	CH_2 deformation
1410	COH in-plane deformation
1225	C−O stretching coupled with O−H in-plane bending
1163	C−O stretching coupled with O−H in-plane bending
796	CH_2 twisting and C−COOH stretching

4) References

[1] S. Y. Venyaminov, F. G. Prendergast, *Anal. Biochem.* **1997**, **248**, 234.

[2] C. Negrell-Guirao, F. Carosio, B. Boutevin, H. Cottet, C. Loubat, *J. Polym. Sci. Part B Polym. Phys.* **2013**, *51*, 1244.

[3] B. C. Smith, *Spectroscopy* **2019**, *34*, 30.

[4] J. Dong, Y. Ozaki, K. Nakashima, *Macromolecules* **1997**, *30*, 1111.