Supporting Information

Molecular Mobility of Thin Films of Poly (bisphenol-A carbonate) Capped and with one Free Surface: From Bulk-like Samples down to the Adsorbed Layer

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Derivative approach:

The Vogel/Fulcher/Tammann equation reads

$$\log f_p = log f_\infty - \frac{A}{T - T_0} \qquad \text{(S1)}$$

(f_∞ -relation rate at infinite temperatures, T_0 Vogel temperature, A- fit constant). The derivative with respect to temperature and rearrangement results in

$$\left(\frac{d\, log f_p}{dT}\right)^{-1/2} = A^{-\frac{1}{2}}(T - T_0). \qquad \text{(S2)}$$

A plot of $\left(\frac{d\, log f_p}{dT}\right)^{-1/2}$ versus temperature results in a straight line with T_0 for $\left(\frac{d\, log f_p}{dT}\right)^{-1/2} = 0$.

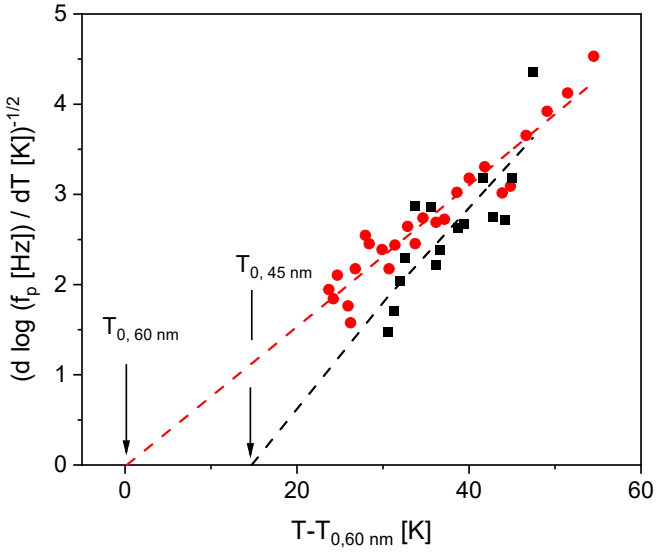

Figure S1: $\left(\frac{d\, log f_p}{dT}\right)^{-1/2}$ versus temperature: Red circles – 60 nm; black squares – 45 nm. Dashed lines are linear regressions to the data.

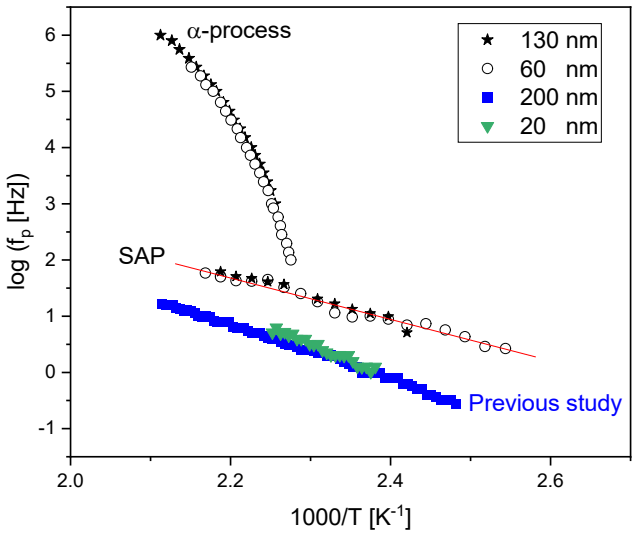

Figure S2: Relaxation map showing the α-relaxation and SAP process for a 130 nm and 60 nm thin film. The SAP found in this study was compared to one found in a previous investigation for a 200 nm and 20 nm PBAC thin film sample. The red line is an Arrhenius fit to the data.

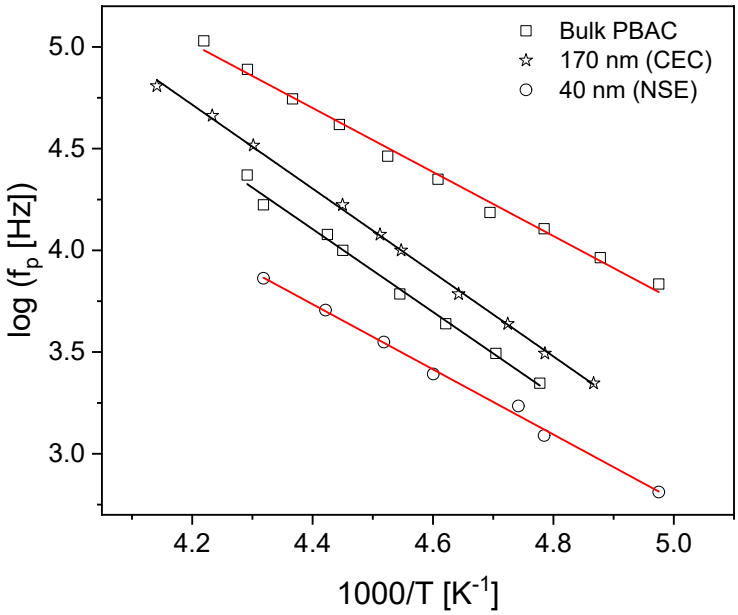

Figure S3: Relaxation map showing the β-relaxation processes for a bulk PBAC sample – squares, a 170 nm sample measured with CEC – stars, and a 40 nm sample measured with NSE – circles. The black lines are the Arrhenius fit indicating the π- π – flips of the β-relaxation and the red lines indicate the phenylene ring rotations of the β-relaxation.

Table S1: Estimated contact angles for each substrate and PBAC

Material	**Diiodo-Methane [°]**	**Ethylene Glycol [°]**	**Glycerol [°]**	**Water [°]**
Poly(bisphenol A carbonate)	84.1 ± 2.9	75.6	94.3 ± 1.2	101.5 ± 0.1
SiO_2	83.0 ± 0.8	43.3 ± 0.6	50.9 ± 0.3	64.9 ± 0.1
Aluminum	59.6	68.3 ± 0.1	82.2	--

Table S2: Estimated VFT parameters for the CEC and NSE measured samples

Thickness [nm]	**log (f_∞ [Hz])**	**A [K]**	**T_0 [K]**
Bulk	11.5	408.1	387.2
170 – CEC	11.5	443.0	384.2
120 – CEC	11.5	476.7	385.7
75 – CEC	11.5	462.9	386.5
60 – CEC	11.5	448.2	391.4
48 – CEC	11.5	448.2	393.4
45 – CEC	11.5	433.4	394.5
40 – NSE	11.5	471.8	384.8
26 – NSE	11.5	332.7	413.2
18 – NSE	11.5	396.7	424.4