Electronic Supplementary Material (ESI) for Soft Matter.

Supplementary for "Capillary rupture of suspended polymer concentric rings"

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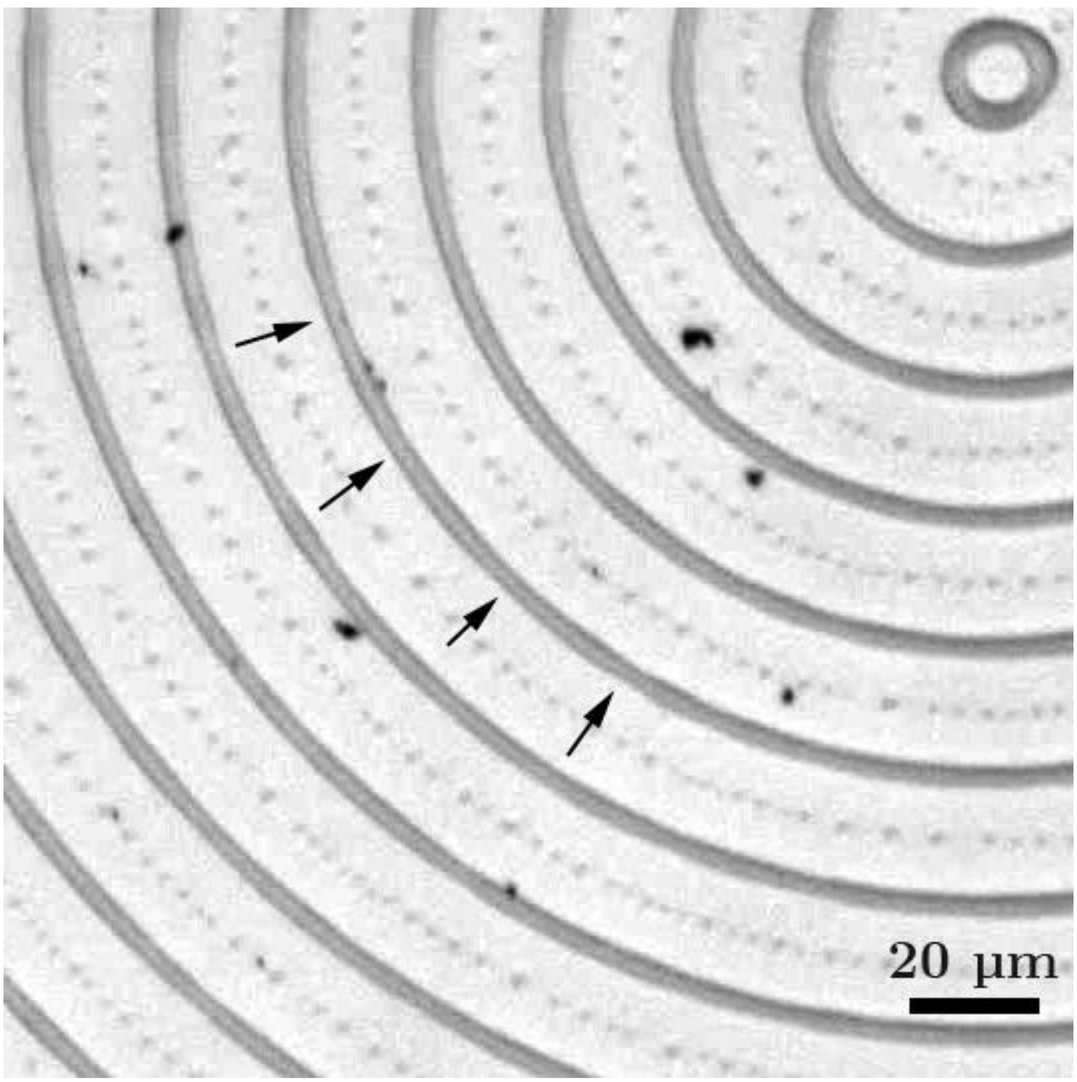

Figure S1 A magnified view of Sample A annealed for 5 minutes. The arrows indicate the necking areas.

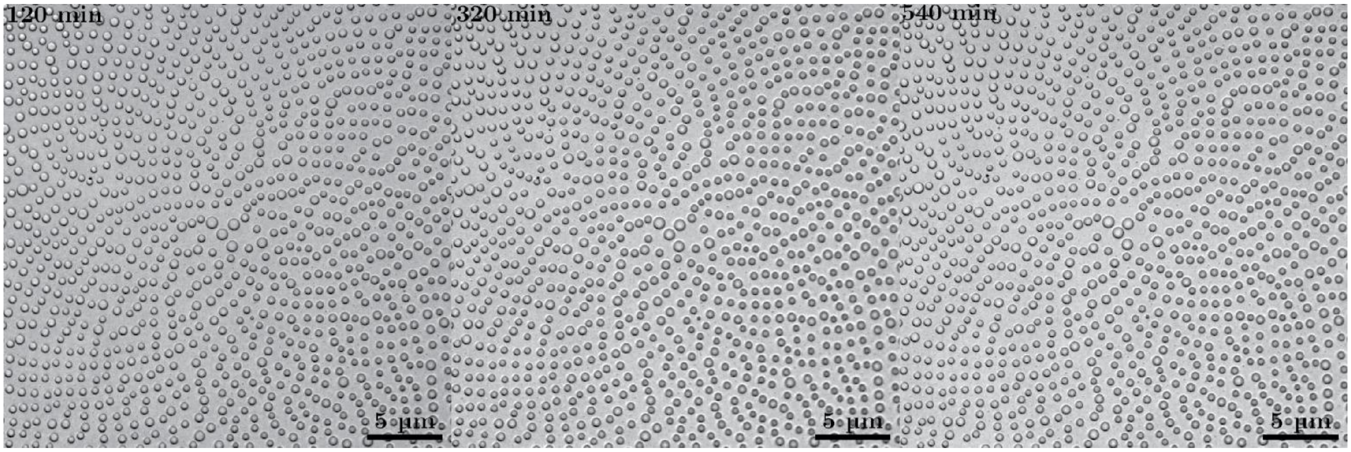

Figure S2 Optical snapshots of "Sample B" annealed at 170 °C for the labeled duration.

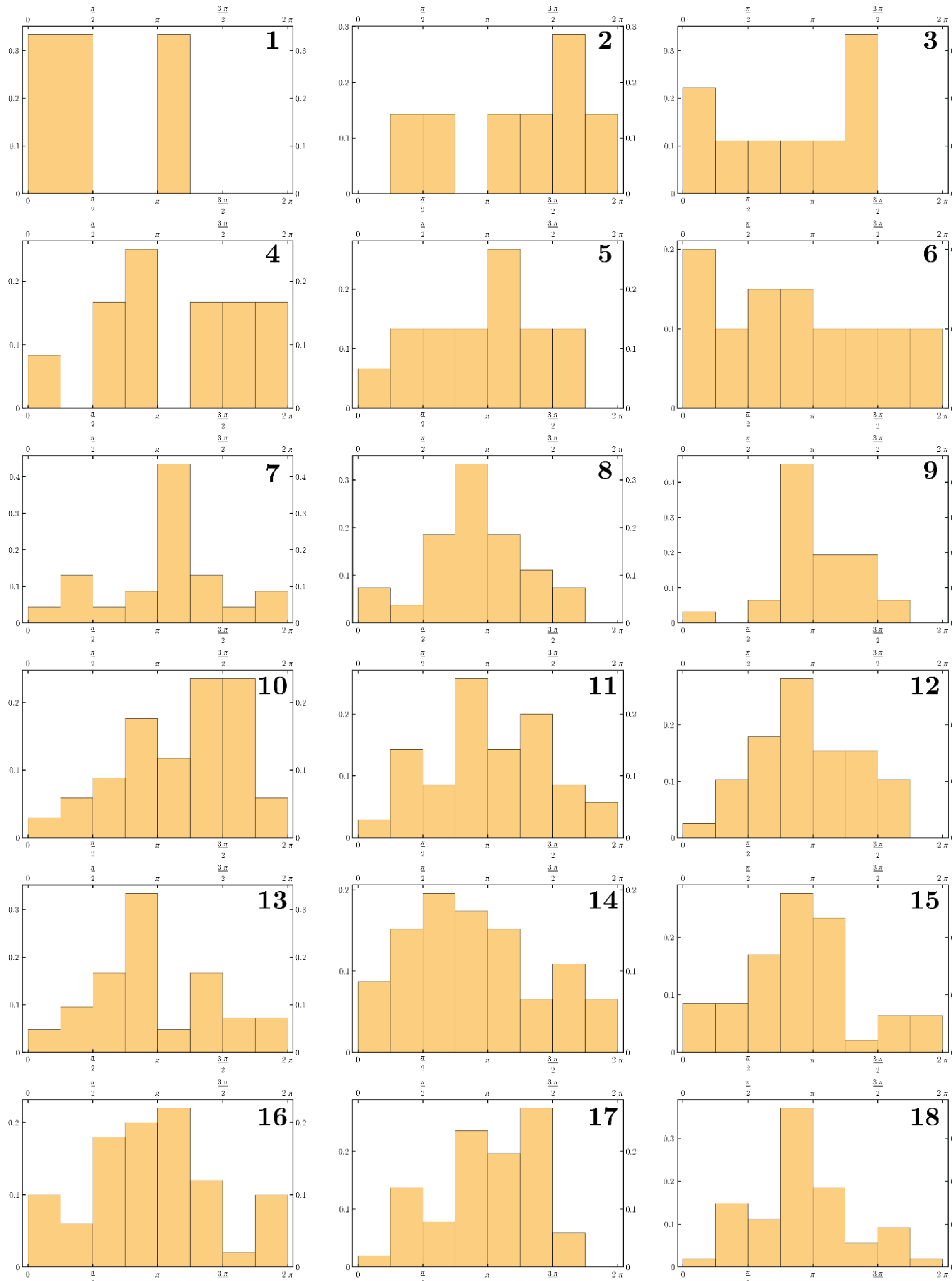

Figure S3 Distribution of ϕ for each PS ring in Sample B. X-axis is ϕ. Y-axis is probability.

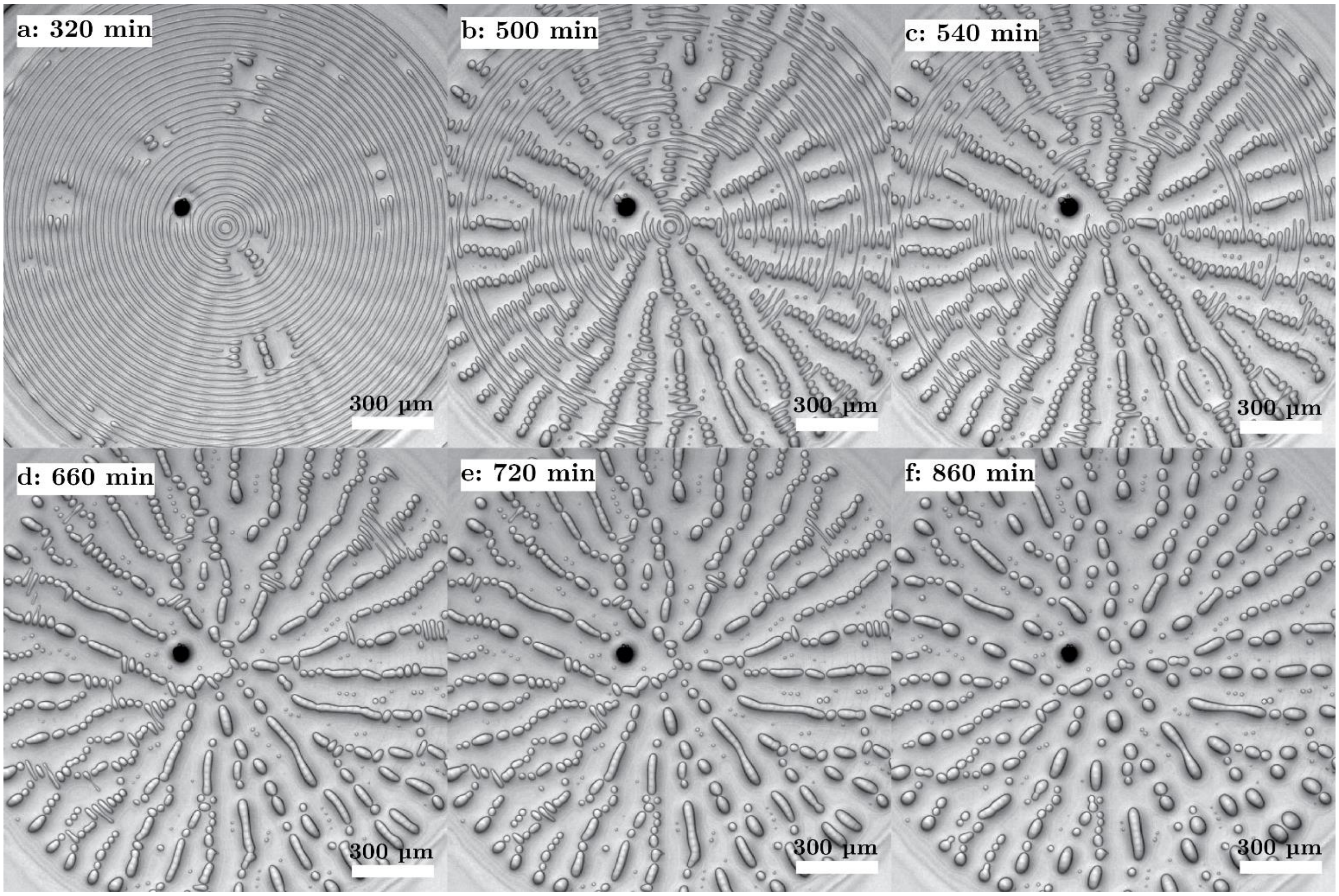

Figure S4 Optical snapshots of "Sample C" annealed at 170 °C for the labeled duration.

Note: Due to the nature of this multi-step fabrication procedure, defects (patterning, impurity, thickness/width variation) might exist. It is known that the capillary rupture time is strongly dependent on the initial disturbance on the thread. [Ref. 22 of this Report]. For Sample A and B, a distribution in the rupture time was observed (Sample A: Fig. 2a, 2b; Sample B: Fig. 5b). For Sample C, this phenomenon is more noticeable because of the significantly longer breakup time. Nevertheless, even with such a distribution of breakup time, it is clear that synchronized breakup is evident in Fig. S4a.

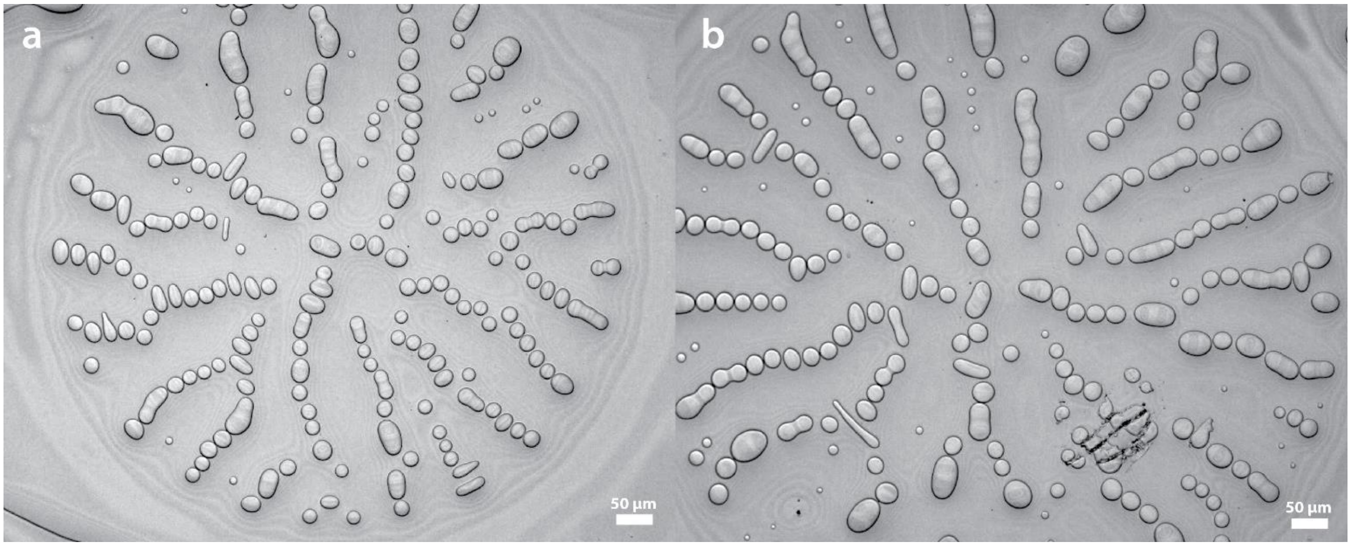

Figure S5 Optical image of other strongly confined ($H/h < 1.3$) samples, annealed at 170°C for 860 min.

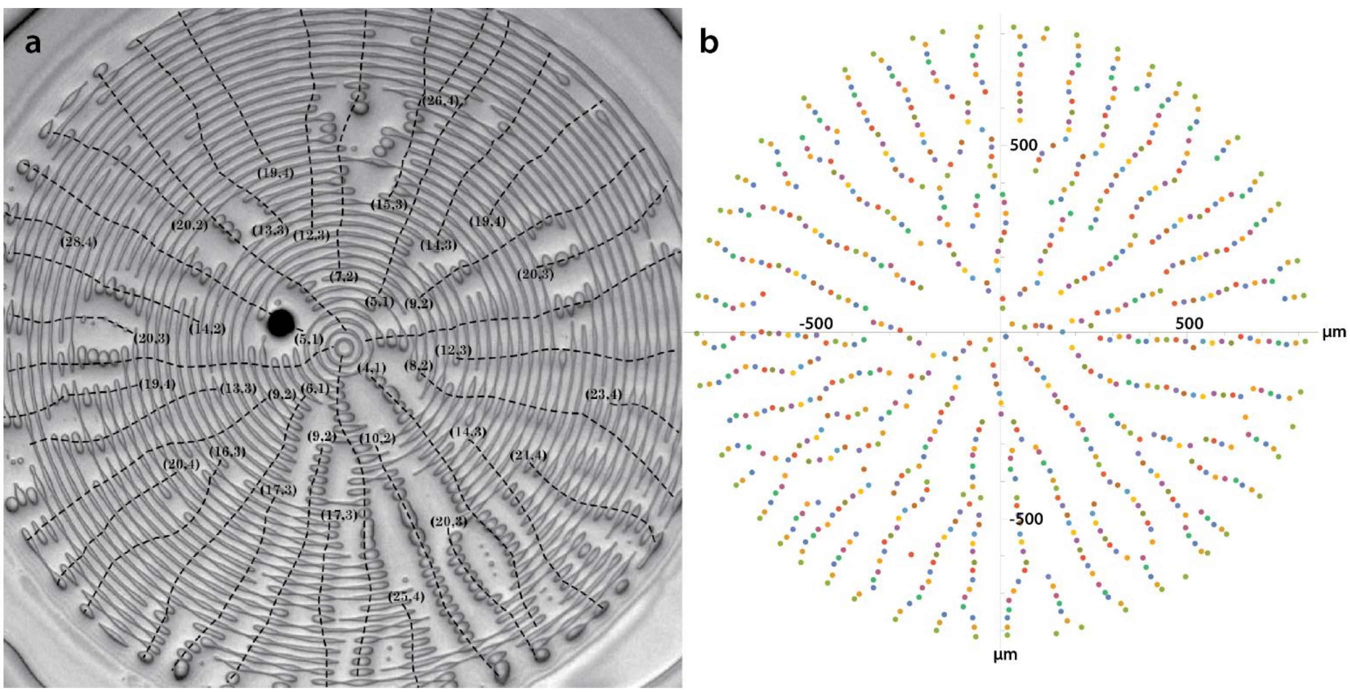

Figure S6 (a) Illustration of the inserted new waves on the optical image of Sample C annealed at 170 °C for 420 min. Each new insertion is denoted by (x, n), where x is the order of the ring and n is the order of the generation. (b) The corresponding digitized coordinates of the fluctuation peaks.

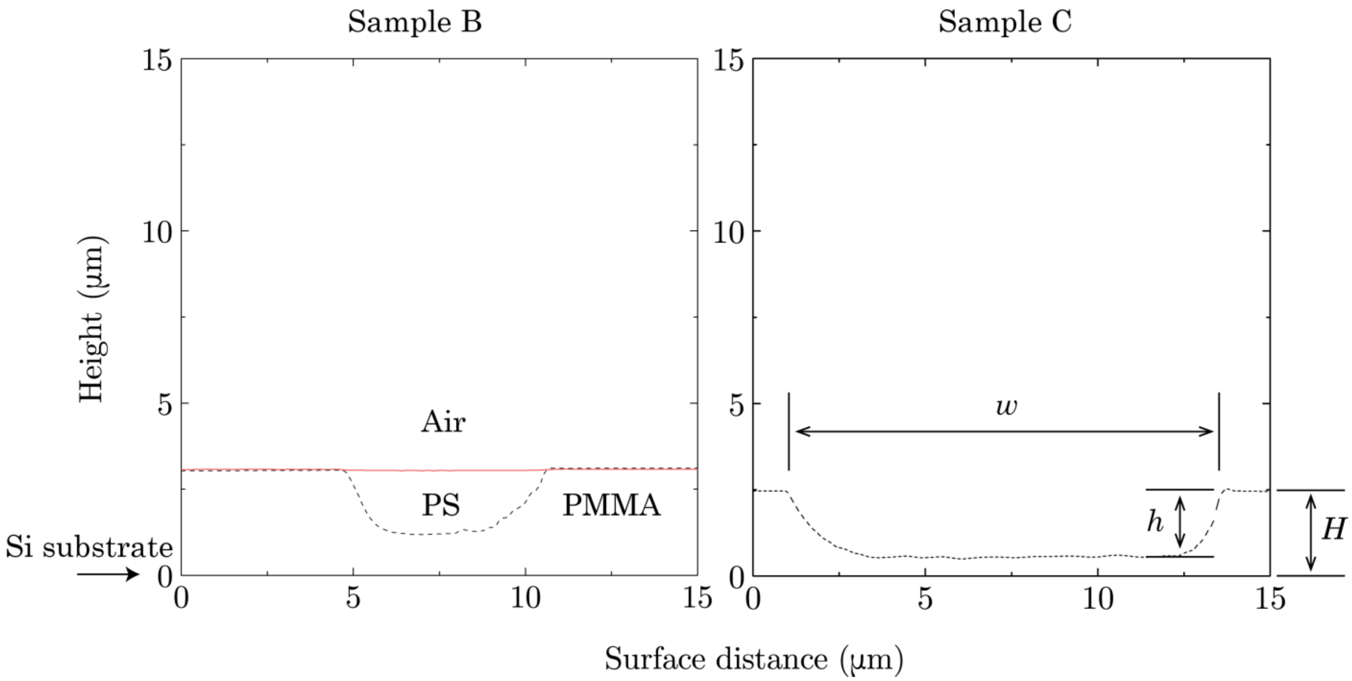

Figure S7 Cross-sectional geometries of an individual ring in Sample B and C, as labeled respectively. The plots combine measurements taken before and after the PS was selectively dissolved. The "0" height has been adjusted to the level of the sample surface and the axes were scaled to 1:1 ratio, in order to provide an intuitive view of the cross-sectional shape. The symbols that denote this plot are consistent with those used in Figure 1.