Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Melting and β to α transition behavior of β-PBA and the β-PBA/PVPh blend investigated by synchrotron SAXS and WAXD

Xiaoli Sun,[†] Junteng Liu, [‡] Isao Takahashi[§] and Shouke Yan[†]*

† State Key Laboratory of Chemical Resource Engineering and ‡ Beijing Key Laboratory of Membrane Science and Technology, Beijing University of Chemical Technology, Beijing 100029, China (*skyan@mail.buct.edu.cn*)

§ School of Science and Technology, Kwansei Gakuin University, Sanda 669-1337, Japan.

Supporting Information 1: One-dimensional Correlation Function Analysis

The characteristic parameters such as the average thickness amorphous layer [la], the average thickness of the lamellar crystallites [lc], and the average long period [L] were estimated from the one-dimensional correlation function, K(z), according to the method proposed by Strobl and Schneider1, as demonstrated in Figure S1-1. The average long period is determined by the value z at the first maximum of K(z). The average thickness of one of the two layers (l_1) is given by the intersection point between the straight line in the self-correlation part (straight line a) and base line drawn through the first minimum of K(z) parallel to the z-axis (straight line b). The average thickness of the other layer is then obtained from $l_2 = L - l_1$. The assignment of l_1 and l_2 to la and lc are done with respect to information of Φ_c calculated from WAXD data.

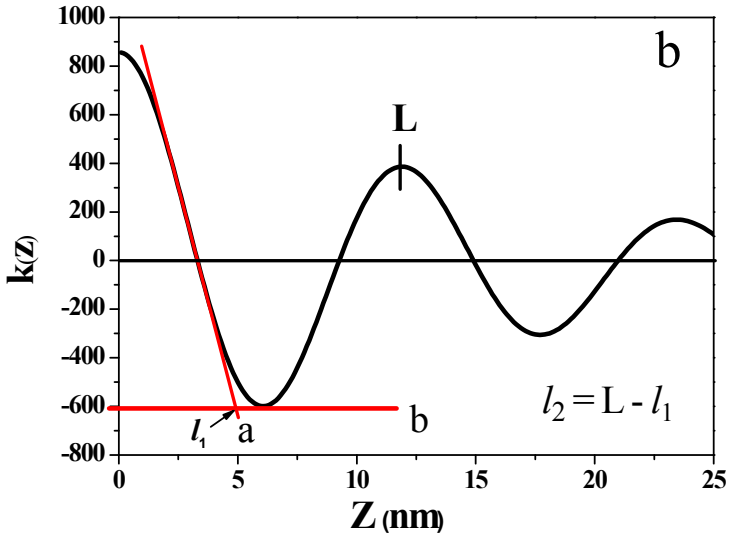

Figure S1

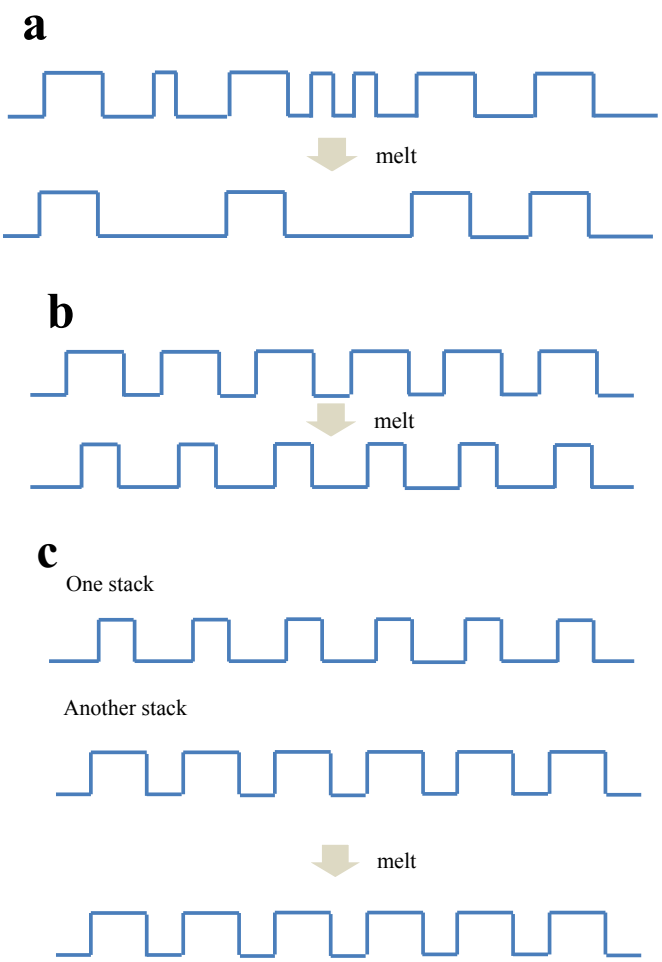

Figure S2 (a) Schematic of sequential melting. (b) Schematic of surface melting. (c) Schematic of stack melting

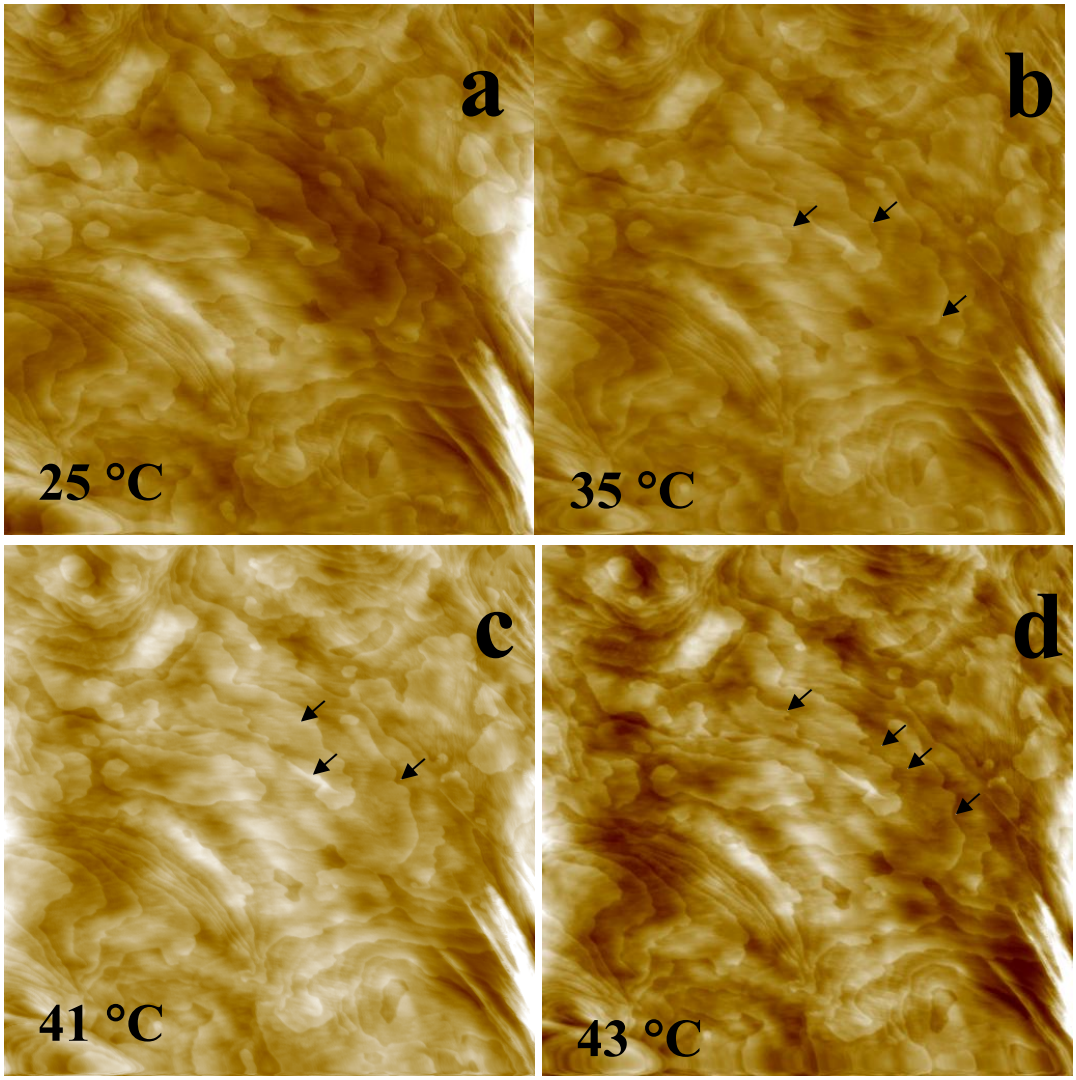

Figure S3 The in situ lamellar morphology change of neat PBA in the heating process tested by AFM.