Supporting Information

Self-Aligned Assembly of Poly(2-vinylpyridine)-*b*-Polystyrene-*b*-Poly(2-vinylpyridine) Triblock Copolymer on Graphene Nanoribbons

Jing Zhou[†, §], *Vikram Thapar*[‡, §], *Yu Chen*[†], *Bi-Xian Wu*[#], *Gordon S. W. Craig*[‖], *Paul F. Nealey*[‖], *Su-Mi Hur*[*, ‡], *Tzu-Hsuan Chang*[*, #], *and Shisheng Xiong*[*, †]

†School of Information Science and Technology, Fudan University, Shanghai 200433, China

‡School of Polymer Science and Engineering, Chonnam National University, Gwangju, 61186, Korea

‖Pritzker School of Molecular Engineering, University of Chicago, 5640 S Ellis Avenue, Chicago, Illinois 60637, United States

#Graduate Institute of Electronics Engineering, National Taiwan University, Taipei, 106 Taiwan

*E-mail: sxiong@fudan.edu.cn; shur@chonnam.ac.kr; tchang9@ntu.edu.tw;

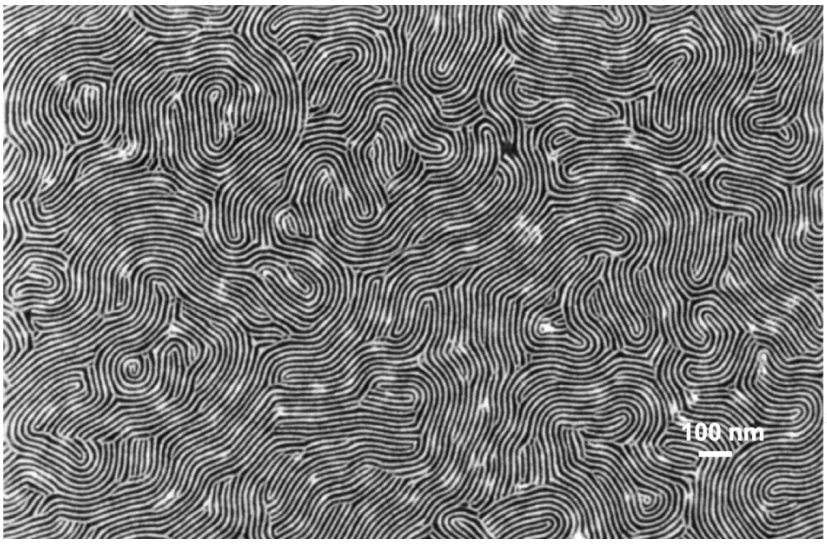

Figure S1. SEM image of self-aligned BCP P2VP-b-PS-b-P2VP (8k-17k-8k) on un-patterned graphene stripes.

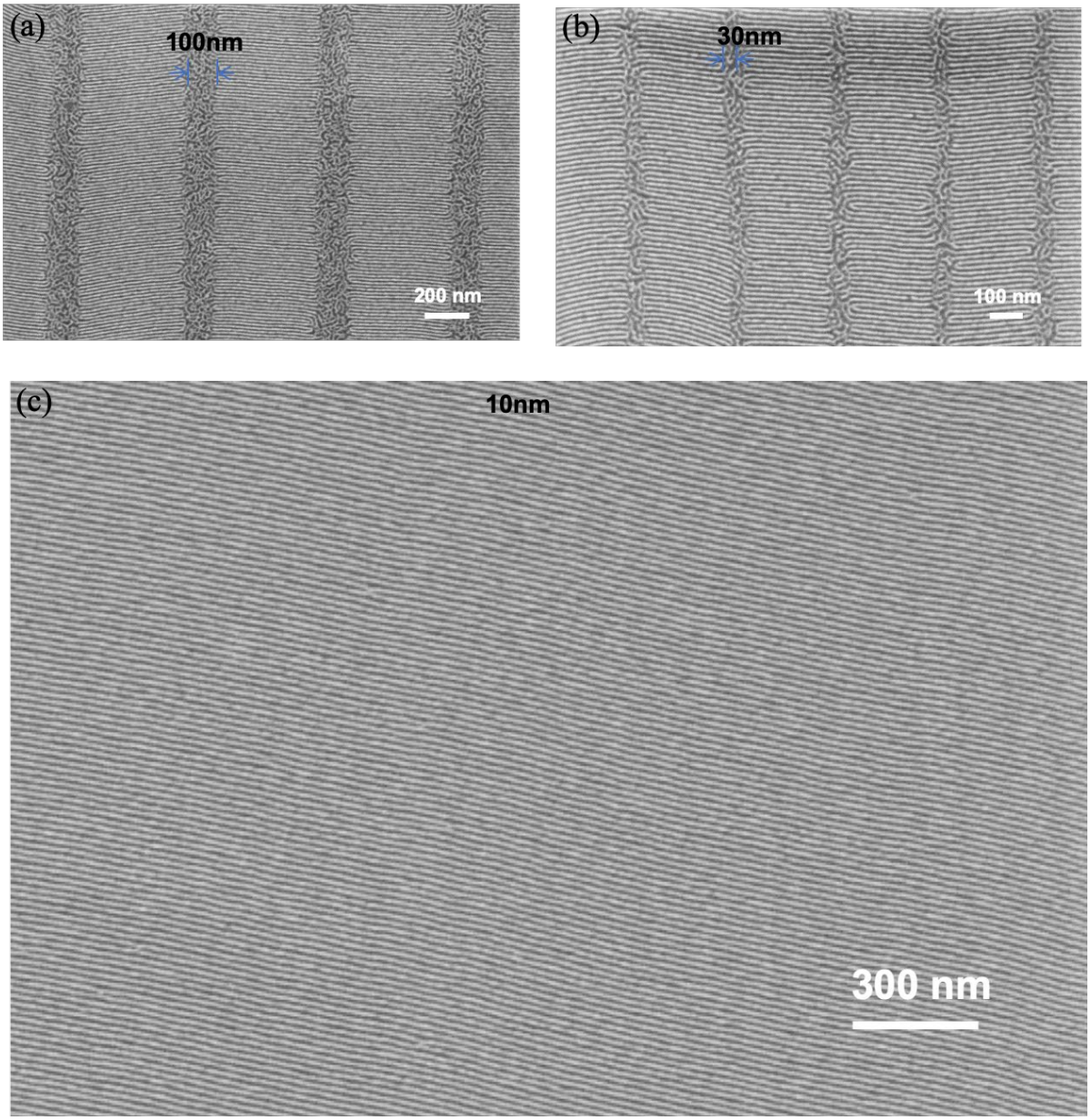

Figure S2. Micron scale SEM images of solvent vapor annealing of P2VP-b-PS-b-P2VP (8k-17k-8k) on graphene stripes with different gap widths.

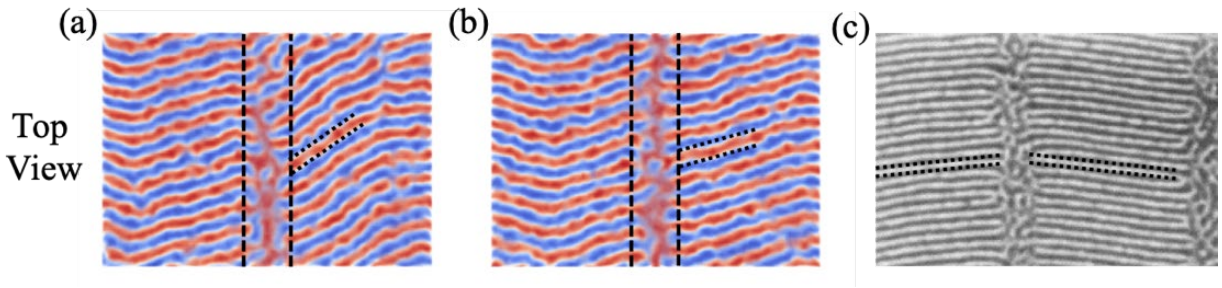

Figure S3. Subfigures (a)–(b) show the top views of the obtained BCP morphologies on a stripe/substrate template with the substrate placed at a template center in our MC simulations for H-SWR (film thickness = $1.5L_0$) system with $2L_0$ gap. The subfigures (a)–(b) are morphologies obtained at 5.8×10^5 MC cycles and 3×10^6 MC cycles. The dotted black lines are shown to qualitatively signify the decrease in the amount of tilting with the increase in simulation time. Subfigure (c) shows the cropped SEM image of the assembly on the graphene with 30 nm gaps. The dotted black lines are drawn to highlight the interface of couple of aligned lamellae.

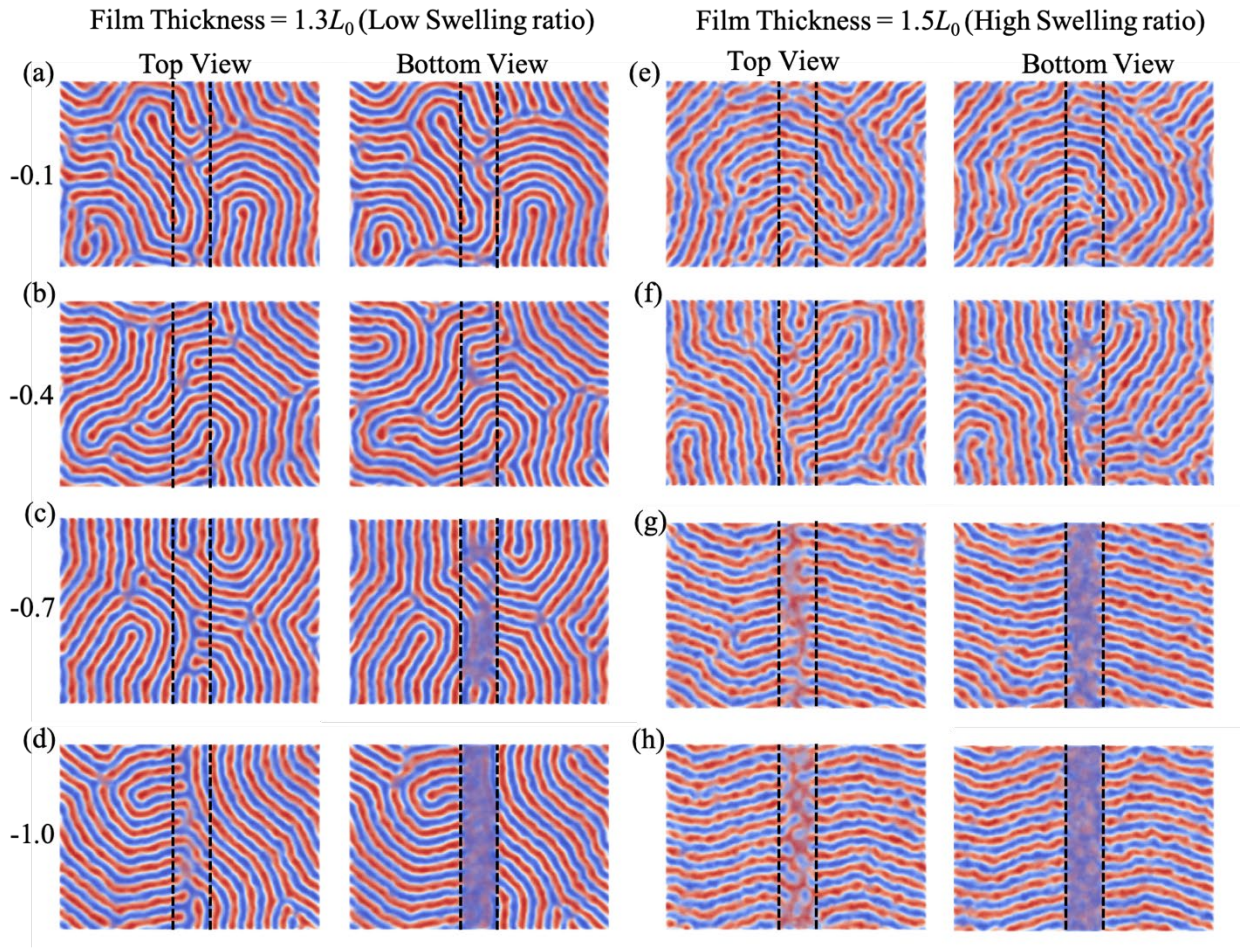

Figure S4. Subfigures (a)–(d) and (e)–(h) show the obtained BCP morphologies on a stripe/substrate template with the substrate placed at a template center in our MC simulations for L-SWR (film thickness = 1.3L_0) and H-SWR (film thickness = 1.5L_0) systems respectively for different $\lambda_{A\text{-substrate}}N$ values as shown in the right. The subfigures (a)–(d) are morphologies obtained at 10^5, 10^5, 7.5×10^5 and 7.5×10^5 MC cycles, respectively, whereas the subfigures (e)–(h) are morphologies obtained at 10^5, 10^5, 1.025×10^6 and 1.025×10^6 MC cycles respectively. For each subfigure, top and bottom views of each morphology are shown. A-rich and B-rich domains are represented by colors red and blue respectively. For all systems, the width of substrate region, i.e., the gap between the stripes, is $2L_0$.

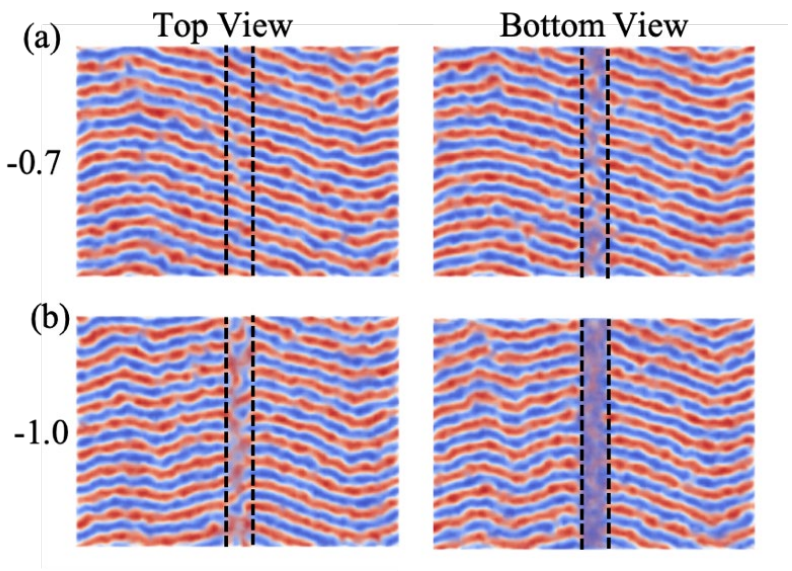

Figure S5. Subfigures (a)–(b) show the obtained BCP morphologies on a stripe/substrate template with the substrate placed at a template center in our MC simulations for H-SWR (film thickness = $1.5L_0$) systems respectively for different $\lambda_{A\text{-substrate}}N$ values as shown in the right. The subfigures (a)–(b) are morphologies obtained at 1.025×10^6 MC cycles. For each subfigure, top and bottom views of each morphology are shown. A-rich and B-rich domains are represented by colors red and blue respectively. For all systems, the width of substrate region, i.e., the gap between the stripes, is $2L_0$.