Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary Information

Tunable thermal conductivities of two dimensional nanomaterials under in-plane torsion

Yinfeng Li[1,2,*], Qianling Lin[1], Ye Li[2], Daxiang Cui[3]

[1] Department of Engineering Mechanics, School of Naval Architecture, Ocean and Civil Engineering (State Key Laboratory of Ocean Engineering), Shanghai Jiao Tong University, Shanghai 200240, China

[2] Collaborative Innovation Center for Advanced Ship and Deep-Sea Exploration, Shanghai 200240, China.

[3] Institute of Nano Biomedicine and Engineering, Key Laboratory for Thin Film and Microfabrication Technology of the Ministry of Education, Department of Instrument Science and Engineering, School of Electronic Information and Electrical Engineering, Shanghai Jiao Tong University, Shanghai 200240, China

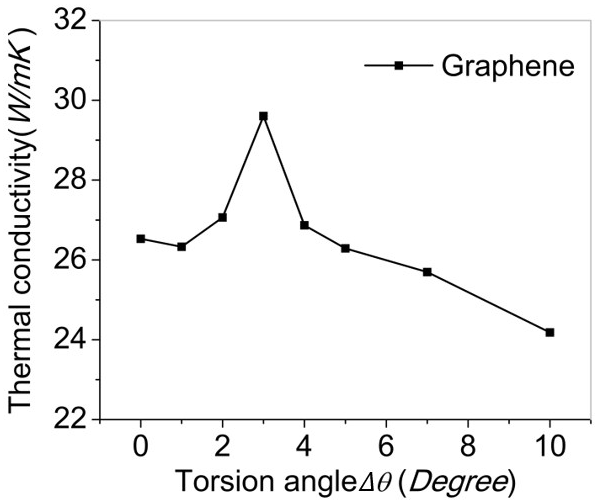

Fig. S1. Evolution of the radial thermal conductivities of graphene as a function of torsion angle with time step τ=0.5 fs. The fixed temperatures in hot and cold regions are 350K and 310K, respectively.

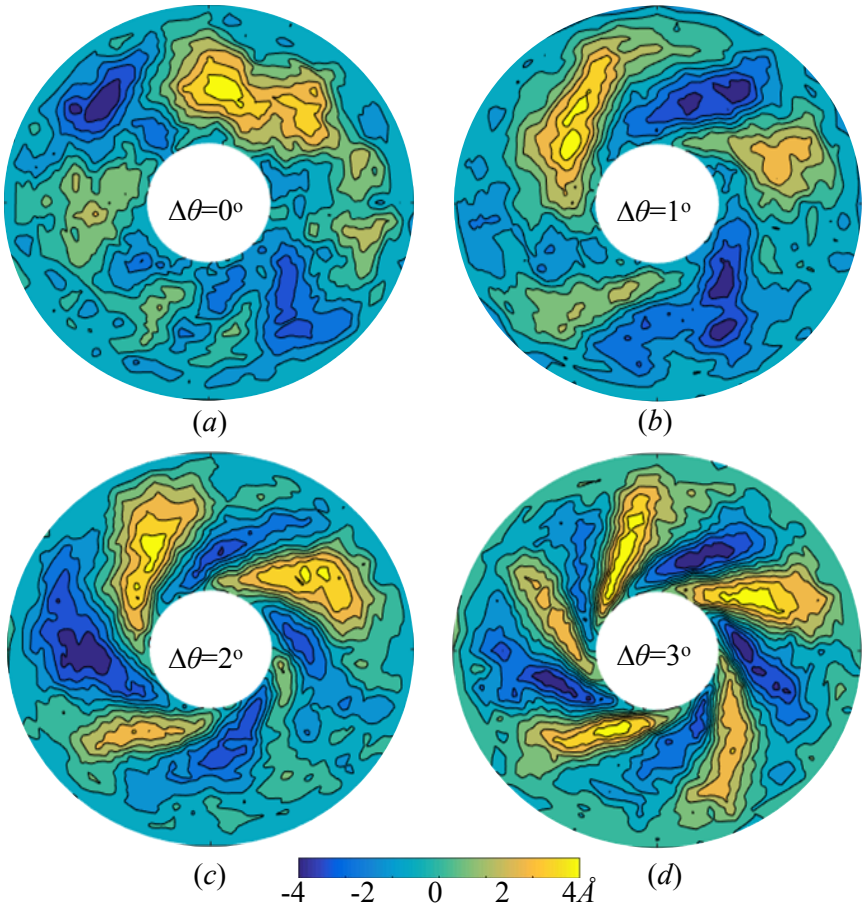

Fig. S2 Evolution of the surface morphology with the increase of torsion angle for graphyne annulus with R_i=3*nm* and R_o=10*nm*. (***a-d***) Contour maps of circular graphyne annulus with torsion angle $\Delta\theta$ ranging from 0º to 3º.

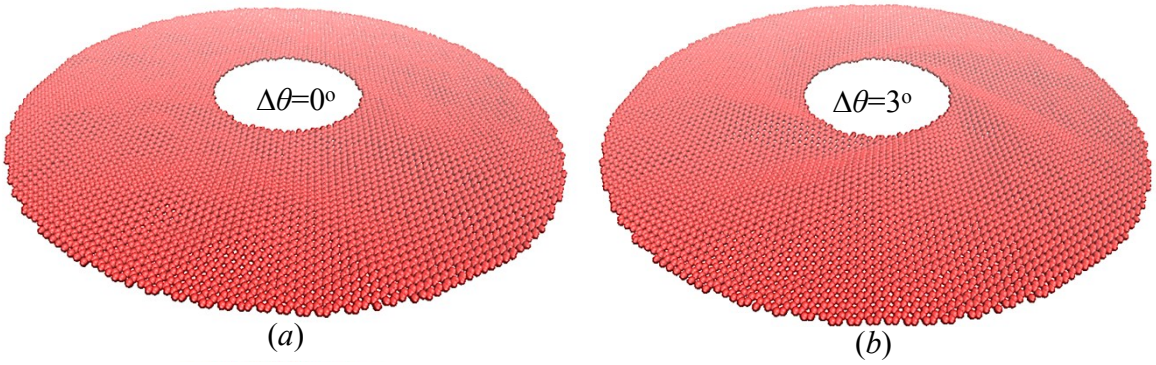

Fig. S3. Surface morphology of circular graphene annulus under in-plane torsion at (*a*) $\Delta\theta$=0º and (*b*) 3º, respectively.

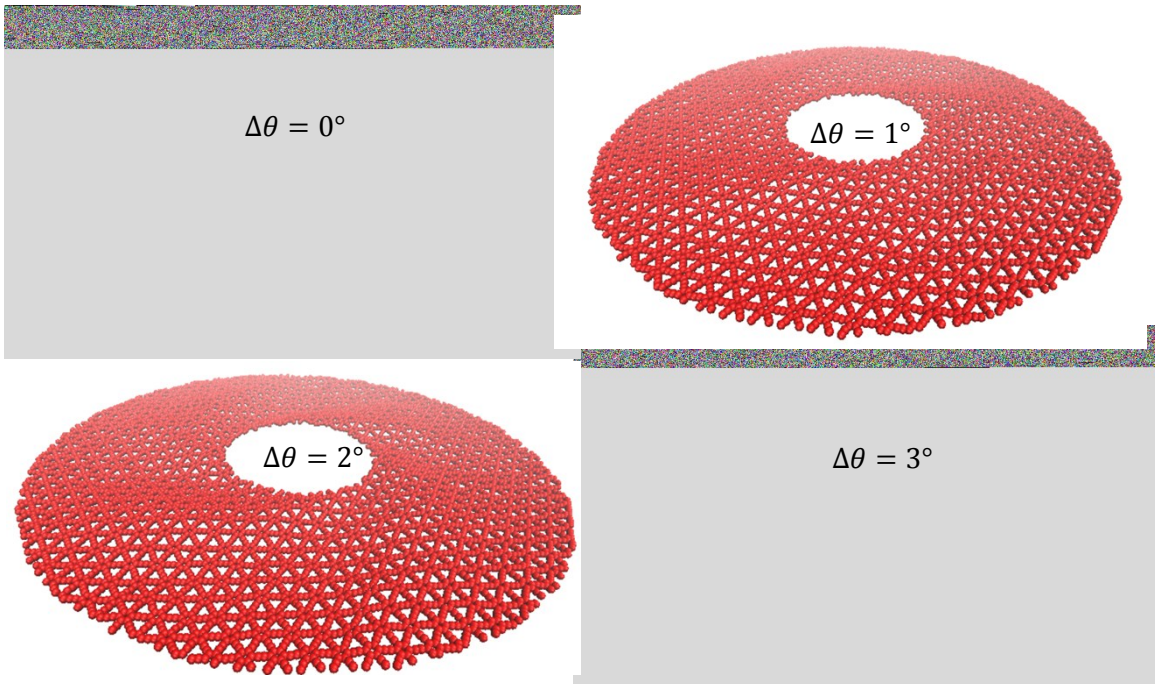

Fig. S4. Surface morphology of circular graphyne annulus at in-plane torsion $\Delta\theta$ varying from 0º to 3º.