Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Supporting Information

Nano-sized graphene flakes: Insights from experimental synthesis and first principles calculations

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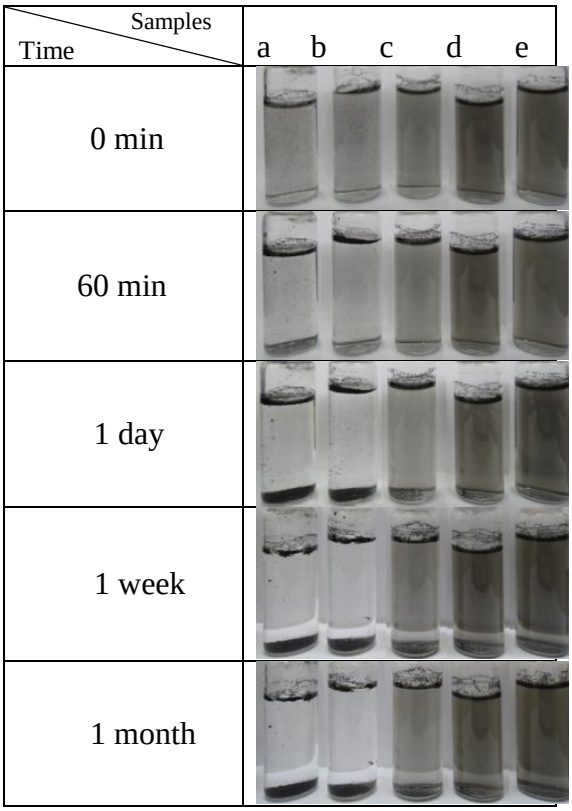

Figure S1. Photographs of the dispersion of GNFs in DI water for different applied pressures, (a) 16000 lb/in^2, (b) 32000 lb/in^2, (c) 48000 lb/in^2, (d) 65000 lb/in^2, and (e) 81000 lb/in^2.

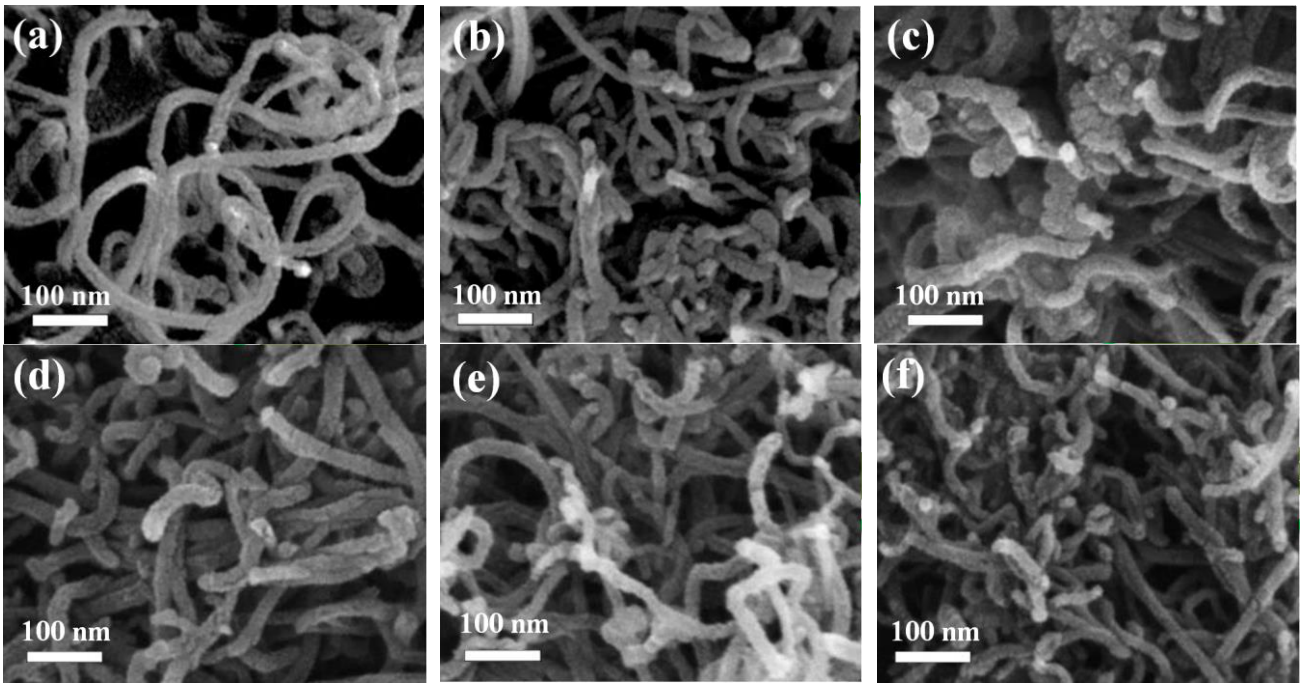

Figure S2. SEM images of squashed CNTs under different pressures (Step 1), (a) orgin, (b) 16000 lb/in^2, (c) 32000 lb/in^2, (d) 48000 lb/in^2, (e) 65000 lb/in^2, and (f) 81000 lb/in^2.

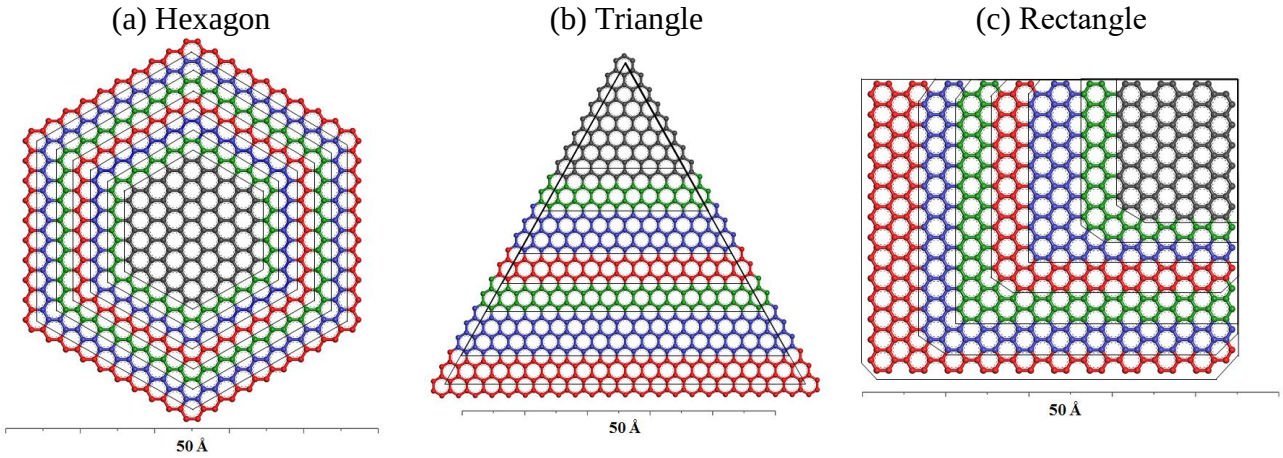

Figure S3 Schematic illustration of the three type GNFs: (a) Hexagon, (b) Triangle, (c) **Rectangle.**

Table S1 Carbon atoms of each layer GNFs in Figure S3. The number of hydrogen atoms that can be bonded to bare (H-unpassivated) GNFs is presented in parentheses.

	Hexagon	**Triangle**	**Rectangle**
Layer1 (black) (Molecule-like)	C_{96} (H_{24})	C_{97} (H_{27})	C_{96} (H_{26})
Layer2 (green)	C_{150} (H_{30})	C_{141} (H_{33})	C_{142} (H_{32})
Layer3 (blue)	C_{216} (H_{36})	C_{222} (H_{42})	C_{214} (H_{40})
Layer4 (red)	C_{294} (H_{42})	C_{286} (H_{48})	C_{290} (H_{46})
Layer5 (green)	C_{384} (H_{48})	C_{358} (H_{54})	C_{382} (H_{54})
Layer6 (blue)	C_{486} (H_{54})	C_{481} (H_{63})	C_{482} (H_{60})
Layer7 (red) (Bulk-like)	C_{600} (H_{60})	C_{622} (H_{72})	C_{607} (H_{69})