

Supporting Information

Shear induced formation of carbon and boron nitride nano-scrolls

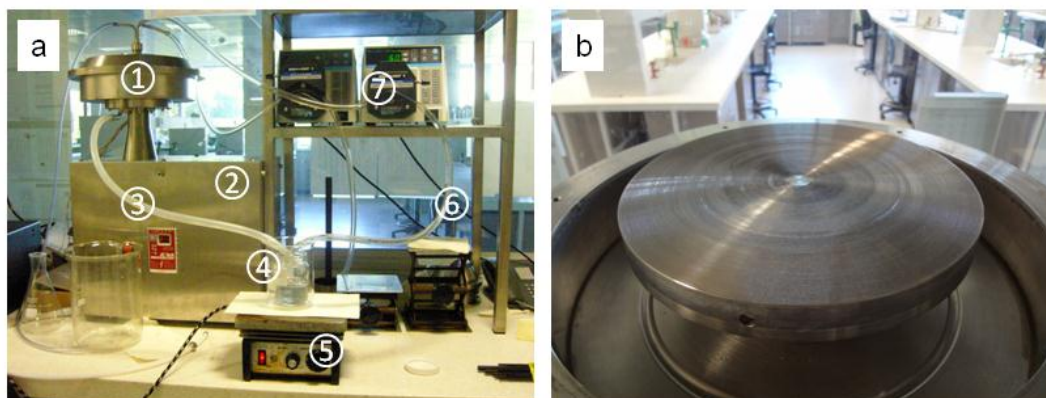
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S1. Spinning disc processor

Photographs of the spinning disc processor and the stainless steel disc are shown in Figure



Components

1. Stainless steel disc	Suspensions are fed onto the rotating disc, close to the centre, with a stainless steel housing for collecting the suspensions thrown off the edge of the disc, which are collected from an output hole.
2. Main body	For controlling the rotating speed and mechanical power of the disc.
3. Silicone tubes (output)	For collecting and directing the outflow to the suspension reservoir.
4. Suspension	Suspensions were temporarily stored for recycling back on to the disc.
5. Magnetic stirrer	For keeping the graphite or boron nitride flakes dispersed in the solvent NMP.
6. Silicone tubes (input)	For directing the suspension from the reservoir to the input of the system.
7. Flow controllers	For controlling the flow rate of the suspensions in the silicone tube.

Figure S1 (a) Spinning disc processor and (b) the stainless steel disc.

S1a and Figure S1b, respectively. Different components of the system are listed below.

S2. TEM images of the exfoliated BN sheets.

The BN flakes are exfoliated by the shear in the dynamic thin films using SDP. TEM images of the exfoliated BN sheets are shown in Figure S2. The exfoliation of the graphite flakes is not as effective as that of BN, which may be due to the smaller particle size of the pristine BN flakes requiring less energy for exfoliation.

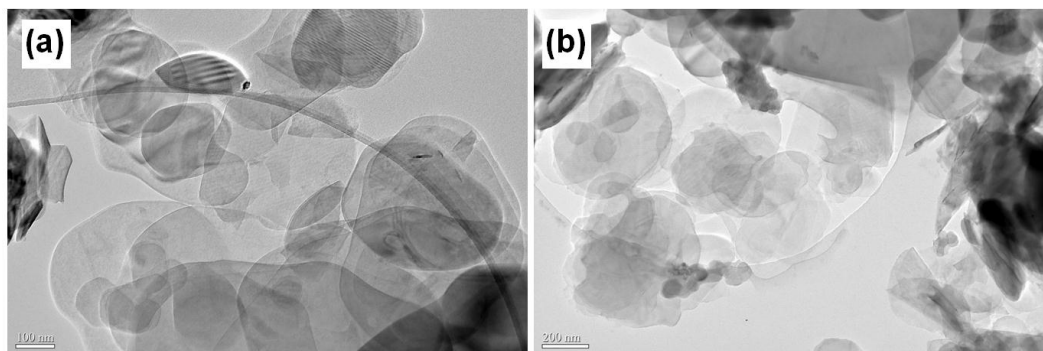


Figure S2 TEM images of the exfoliated BN sheets

S3. Molecular modelling

Most of the minimized structures relaxed back to an almost-flat sheet with the exception of the intermediate with a rollup value of 56 and the fully scrolled sheet with a rollup value of 60.

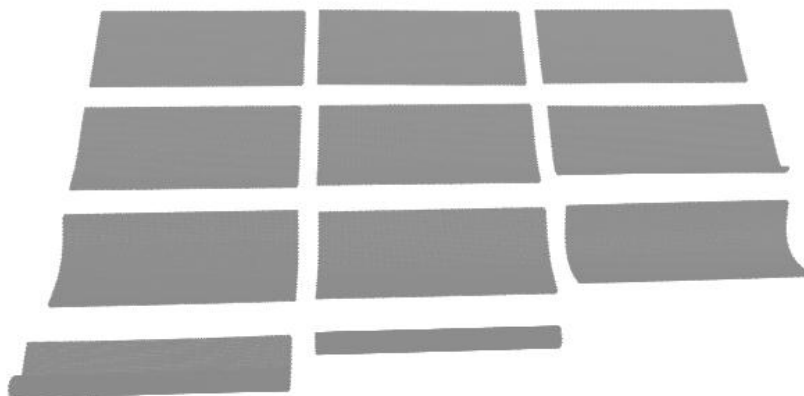


Figure S3-1 Geometry of the sheets after minimization – From top left, sheets with rollup values of 0, 5, 8, 16, 20, 24, 32, 40, 48, 56, and 60.

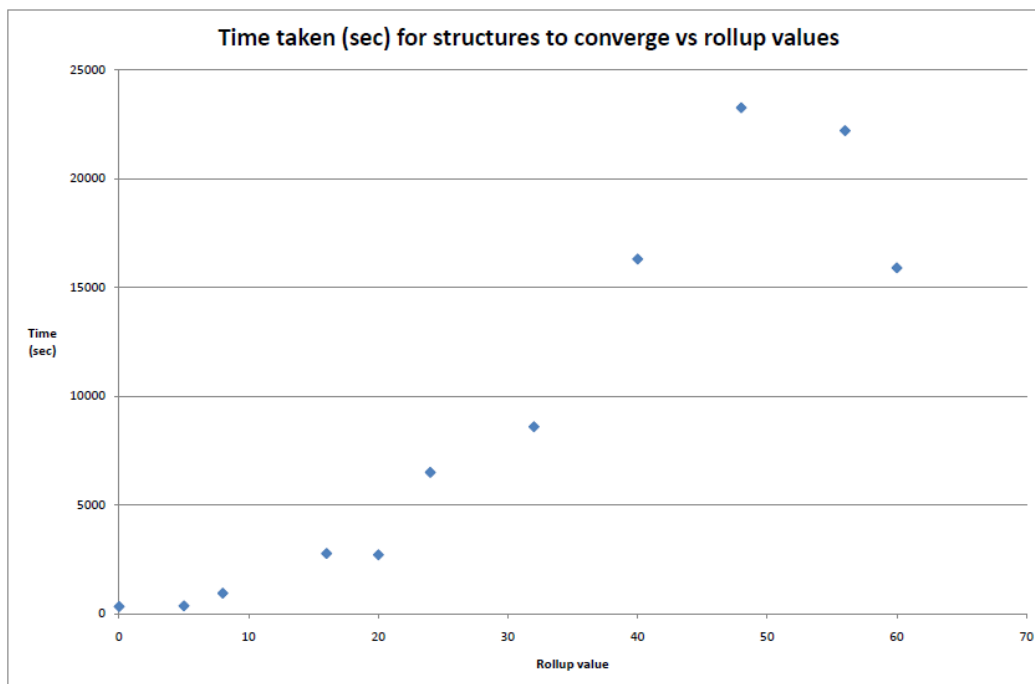


Figure S3-2 Relationship between the time take for the structures to converge and the rollup values (arctan)