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Zhi-Lin Cheng, Bao-Chong Cao, Pei-Rong Wu, Lu Ma, Zan Liu

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## Templated synthesis of graphene nanosheets within curling

2	layered nanostructure of halloysite nanotubes
3	Zhi-Lin Cheng*, Bao-Chong Cao, Pei-Rong Wu, Lu Ma, Zan Liu
4	(School of Chemistry and Chemical Engineering, Yangzhou University, Yangzhou 225002,
5	China)
6	Email: zlcheng224@126.com
7	Abstract: A novel method for the templated synthesis of the multi-layer graphene
8	nanosheets in the curling layered nanostructure of halloysite nanotubes (HNTs) was
9	developed. The intercalation of acrylamide in the layered nanostructure of HNTs was
10	successfully achieved by the second-step substitution method. The formation of
11	polymer precursor as carbon source exploited the in-situ polymerization of acrylamide
12	in the layered nanostructure. A series of characterizations such as XRD, FT-IR,
13	Raman, XPS, UV-Vis, SEM, TEM and HRTEM were used to determine the formation
14	of graphene nanosheets in the curling layered nanostructure of HNTs. The results
15	indicated that the as-synthesized plane-like graphene nanosheets were originated from
16	the unfolding of the spiral spring-like graphene formed in the curling layered
17	nanostructure of HNTs.
18	
19	Keywords: Carbon materials; Nanocomposites; Graphene; Template; HNTs
20 21	1. Introduction
22	Graphene, consisting of less than 10 carbon atom layers, has drawn great
23	interesting because of its fascinating properties such as excellent electronic and
24	thermal conductivity [1,2]. Up to date, several mature approaches have been
25	employed for preparing graphene, such as micromechanical exfoliation of graphite [3]
26	chemical vapor deposition [4], chemical reduction of graphene oxide [5], etc.
27	In recent years, the layered nanostructure for the templated synthesis of graphene
28	has been rapidly developed, which was deemed to be a green and facile approach [6].
29	Sun et.al. [7] reported a method to synthesize graphene nanosheets with controlled
	layer number in the two-dimensional interlayer galleries of layered double hydroxide
30	layer number in the two-difficusional interlayer galleries of layered double hydroxide

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