Supporting Information

Chemical vapor deposition growth of few-layer graphene for transparent conductive films

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Table. S1 Summarizes the detailed experimental parameters of graphene growths on Cu foils.

Experiment conditions	Experiment Numbers	Growth temperature (°C)	First Step		Second Step	
			The flow rate ratio of H_2 to CH_4	Growth time (min)	The flow rate ratio of H_2 to CH_4	Etching time (min)
Different of etching time from 0 to 90 min	No. 1	1000	500/10	3	50/0	0
	No. 2					1
	No. 3					3
	No. 4					5
	No. 5					7
	No. 6					10
	No. 7					15
	No. 8					20
	No. 9					25
	No. 10					30
	No. 11					40
	No. 12					60
	No. 13					90
Etching under 80 and 100 sccm H_2.	No. 14				80/0	30
	No. 15				100/0	30
50 sccm H_2 and 0.2 sccm CH_4, etching for different time	No. 16				50/0.2	10
	No. 17					30
	No. 18					60
80−150 sccm H_2 and 0.2 sccm CH_4, etching for 30 min	No. 19				80/0.2	30
	No. 20				100/0.2	
	No. 21				150/0.2	
0.4 or 1 sccm CH_4 and 50 sccm H_2, etching for 30, 60,	No. 22				50/0.4	30
	No. 23					60
	No. 24					90
	No. 25				50/1	30
	No. 26					60

and 90 min	No. 27			90
First growth stage only 1.5 min	No. 28	1.5	50/0	30
	No. 29			60
	No. 30			90

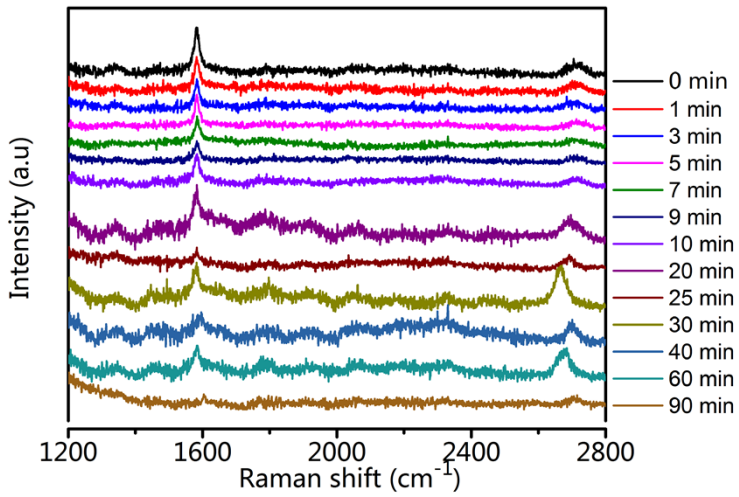

Fig. S1 Raman spectroscopy of as-prepared graphene samples with changes of etching time from 0 to 90 min (samples No. 1−13) during the second CVD process.

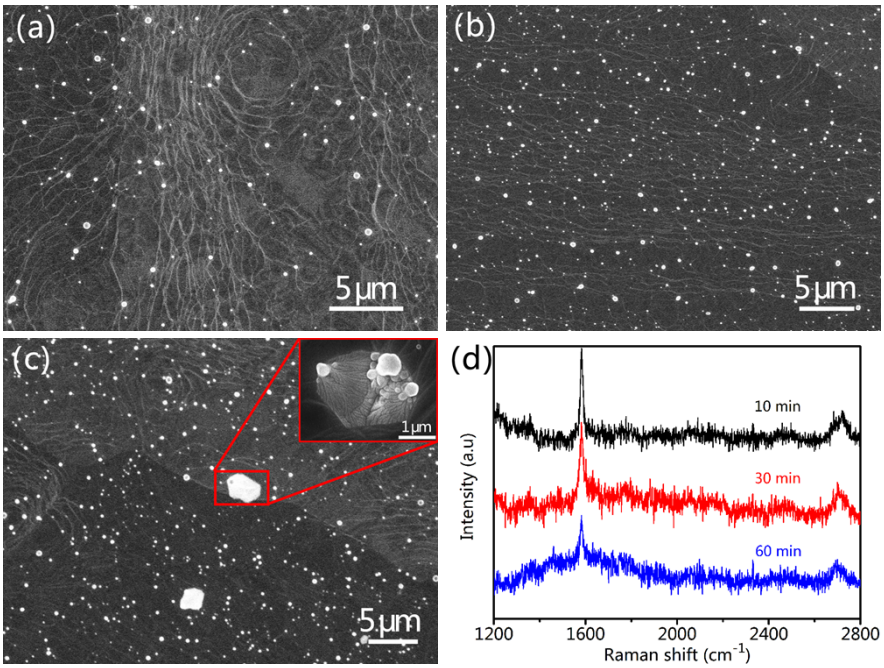

Fig. S2 The SEM pictures of sample No. 16 (a), No. 17 (b), and No. 18 (c), which the conditions are 50 sccm H_2 and 0.2 sccm CH_4, etching for 10, 30, and 60 min, respectively, during the second CVD process; (d) the Raman spectra of these samples.

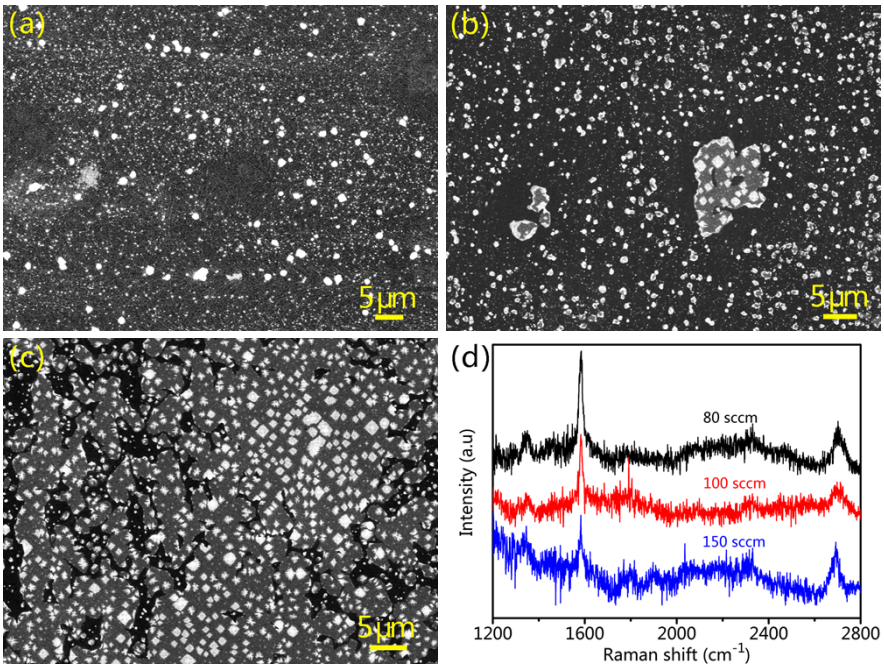

Fig. S3 The SEM pictures of sample No. 19 (a), No. 20 (b), and No. 21 (c), which the conditions are 80−150 sccm H_2 and 0.2 sccm CH_4, etching for 30 min during the second CVD process; (d) the Raman spectra of these samples.

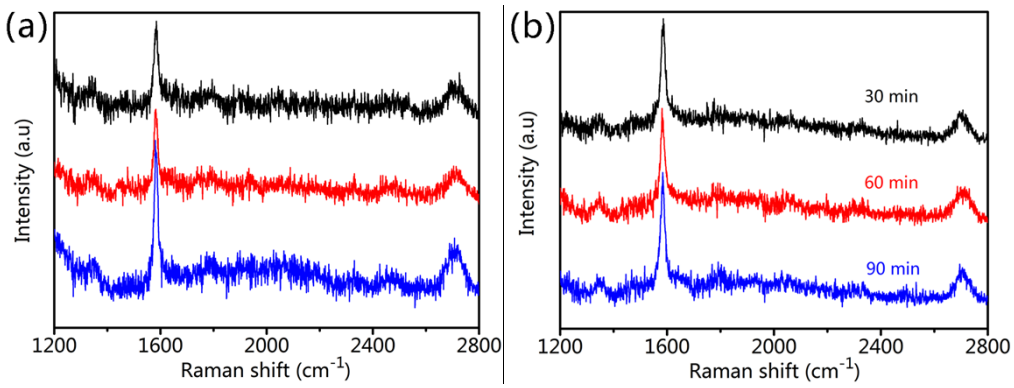

Fig. S4 The Raman spectra of samples No. 22−27, which the conditions are 0.4 sccm CH_4 (a) or 1 sccm CH_4 (b) and 50 sccm H_2, etching for 30, 60, and 90 min during the second CVD process.

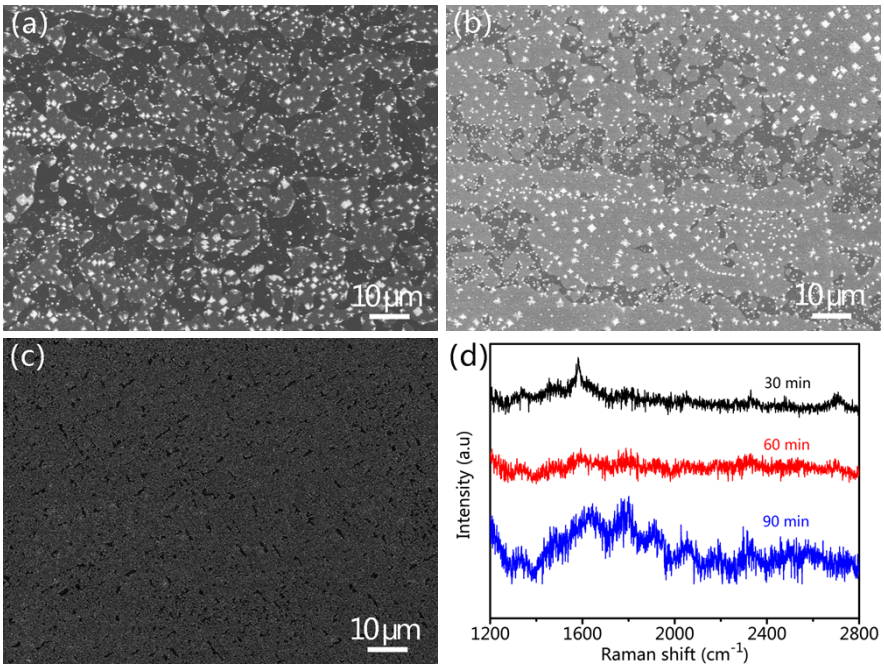

Fig. S5 The SEM pictures of sample No. 28 (a), No. 29 (b), and No. 30 (c), which the first growth stage only last for 1.5 min, while the flow rate ratio of H_2/CH_4 is 50/0 for 30, 60, and 90 min during the second CVD process; (d) the Raman spectra of these samples.

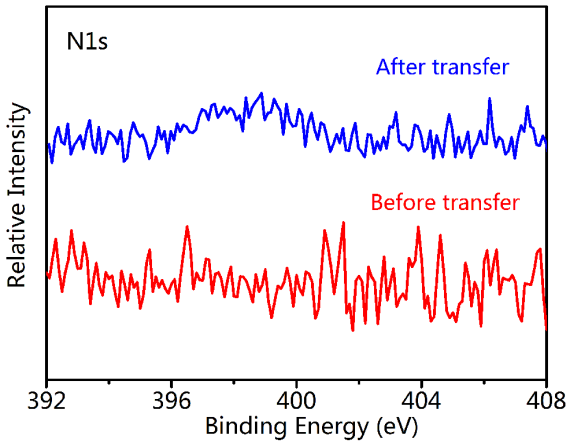

Fig. S6 High-resolution XPS scan for the N of the as-transferred FLG.