

In Situ Growth of Lignin-Based Graphene-Like Film Catalyzed by Metal Substrates

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Fig. S1 The heating procedure for G800 growth.

Fig. S2 The TEM image of G800.

Fig. S3 The TEM image of NG800.

Fig. S4 The SAED of G800.

Fig. S5 The AFM image of G800.

Fig. S6 The 2D-HSQC spectra of AL. (a) sidechain region, (b) aromatic region.

Fig. S7 The SEM image of Ni sheet surface before and after reaction.

Fig. S8 The XRD of samples prepared at different temperatures.

Fig. S9 The Raman spectrum of samples prepared at different temperatures.

Table S1 The elemental analysis of AL

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Table S3 The Electrical conductivity comparison of different materials.

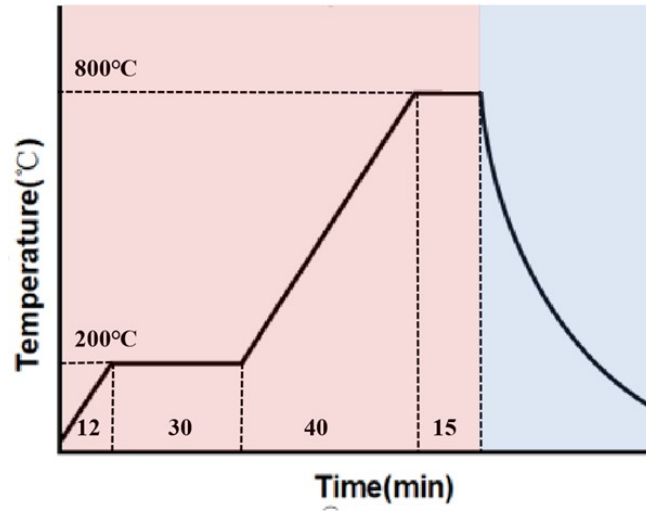


Fig. S1 The heating procedure for G800 growth.

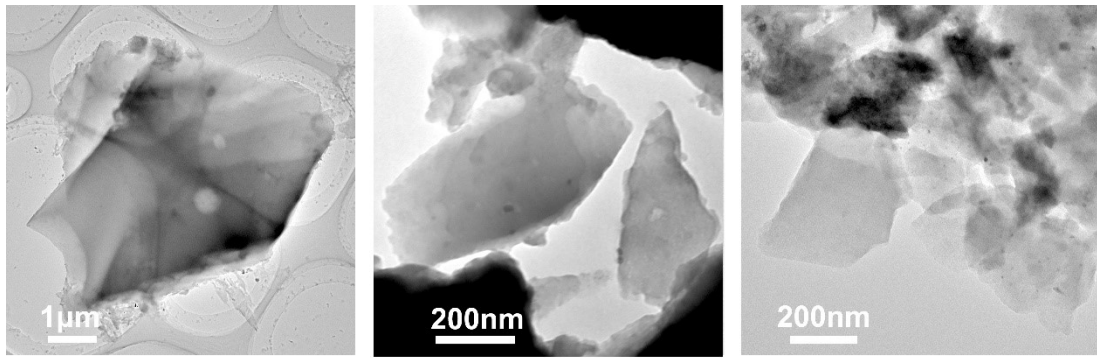


Fig. S2 The TEM image of G800.

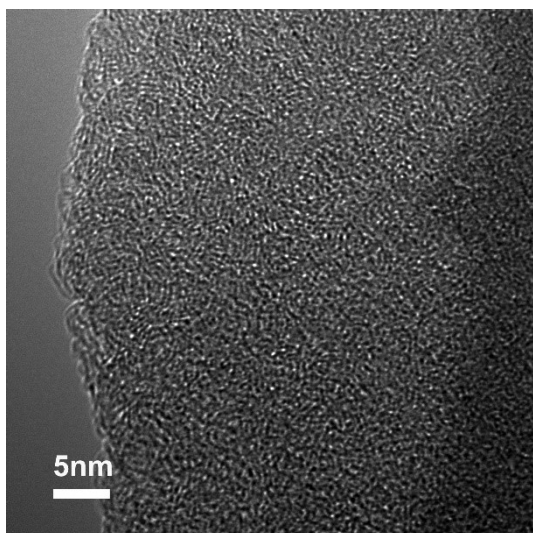


Fig. S3 The TEM image of NG800.

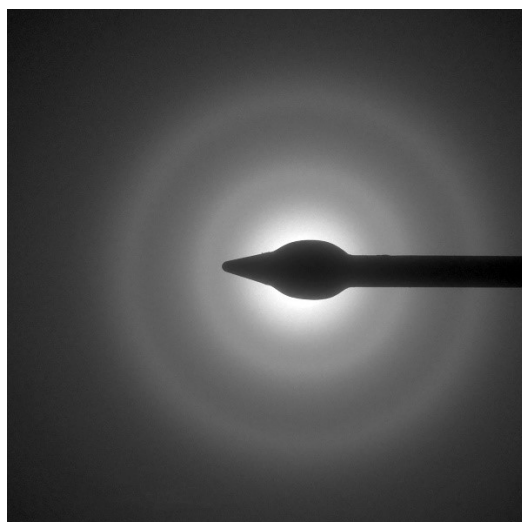


Fig. S4 The SAED of G800.

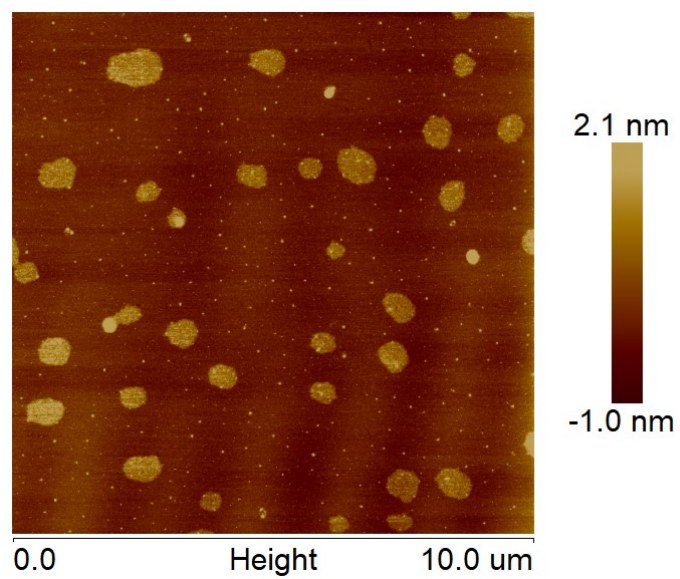


Fig. S5 The AFM image of G800.

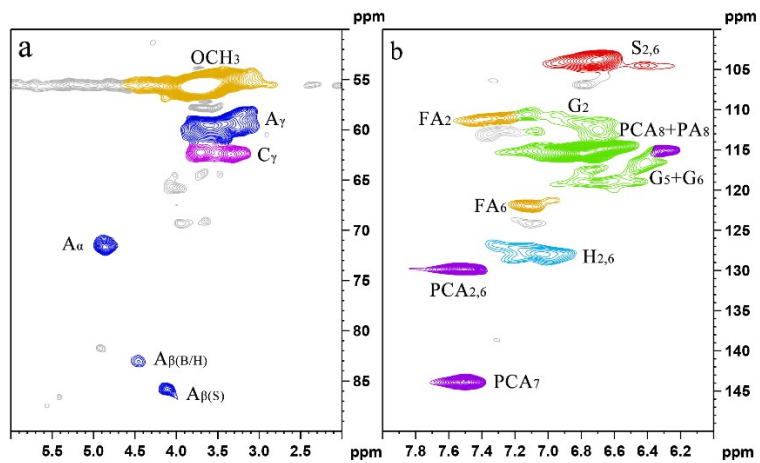


Fig. S6 The 2D-HSQC spectra of AL. (a) sidechain region, (b) aromatic region.

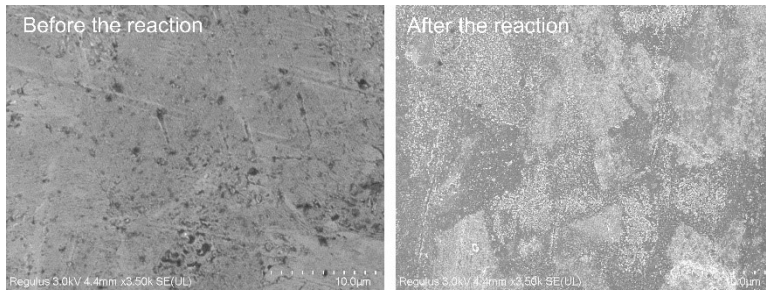


Fig. S7 The SEM image of Ni sheet surface before and after reaction.

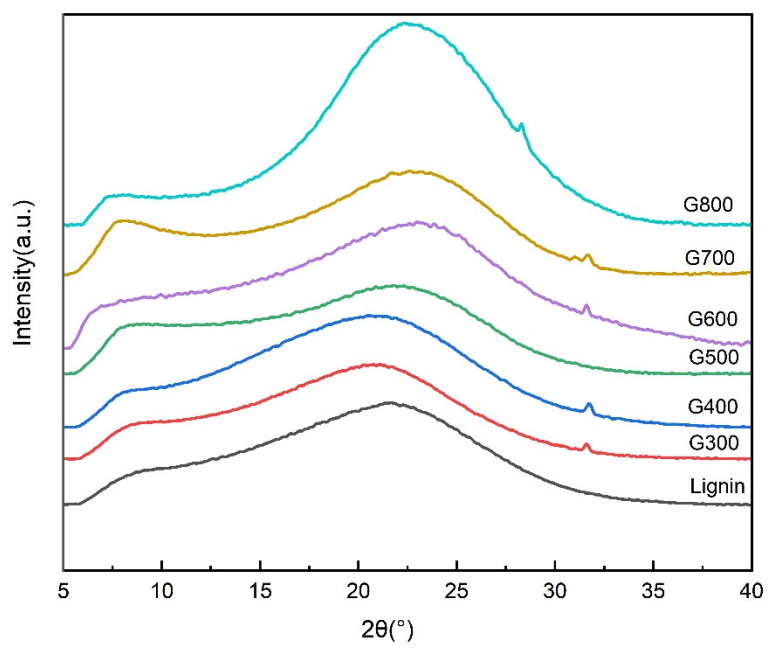


Fig. S8 The XRD of samples prepared at different temperatures.

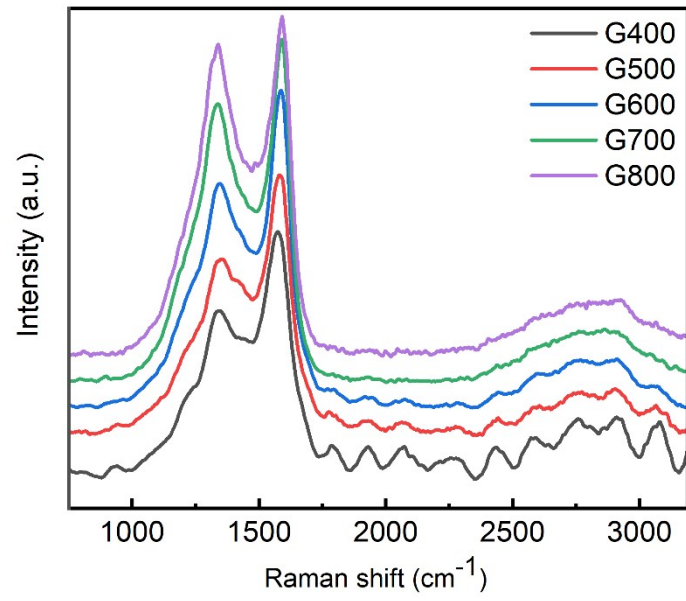


Fig. S9 The Raman spectrum of samples prepared at different temperatures.

Table S1 The elemental analysis of AL

Sample	C content	O content	N content
AL	82.38%	16.75%	0.87%

Table S2 The Raman peaks of samples prepared at different temperatures

Materials	D band	G band	2D band	I_D/I_G	I_{2D}/I_G	Crystallinity
	Position (cm^{-1})	Position (cm^{-1})	Position (cm^{-1})			
G400	1345	1574	2911	0.671	0.202	15.43
G500	1354	1580	2904	0.676	0.162	16.71
G600	1345	1585	2893	0.707	0.149	16.92
G700	1337	1590	2900	0.812	0.146	17.05
G800	1340	1590	2902	0.918	0.165	17.23

Table S3 The Electrical conductivity comparison of different materials.

Name	Pyrolysis Temperature (°C)	Electrical Conductivity (S cm ⁻¹)	Reference
G800	800	~3.3	This wok
RuO ₂ /ACNF	800	0.59	1
PPS α -CD	800	0.62	2
C-800	900	0.19	3

References

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2. S. I. Yun, H. Lee and B. Kim, *J. Electroanal. Chem.*, 2020, 858, 113815.
3. M. Sevilla and A. B. Fuertes, *Carbon*, 2006, 44, 468-474.