Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A.

Supporting Information

Facile Preparation of N-doped Mesocellular Graphene Foam from Sludge Flocs for Highly Efficient Oxygen Reduction Reaction

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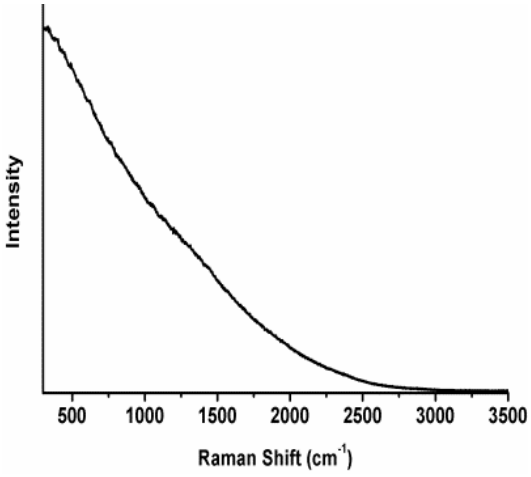

Figure S1. Raman spectra of SF.

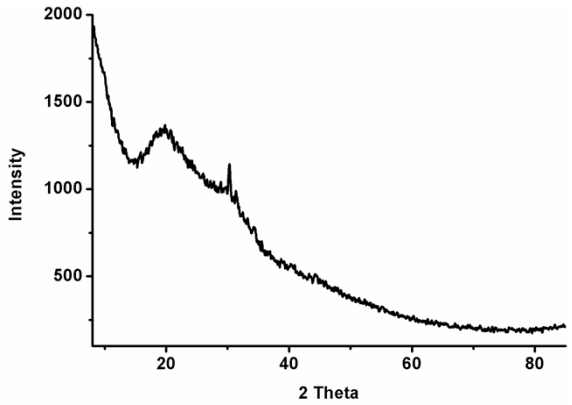

Figure S2 XRD pattern of SF.

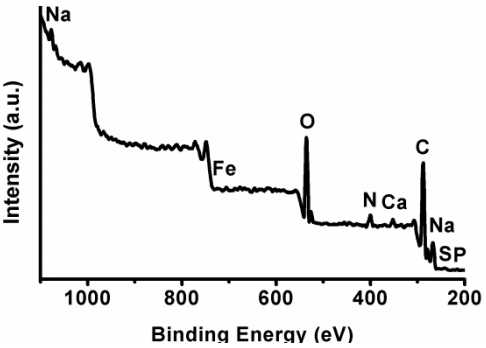

Figure S3. XPS survey of SF.

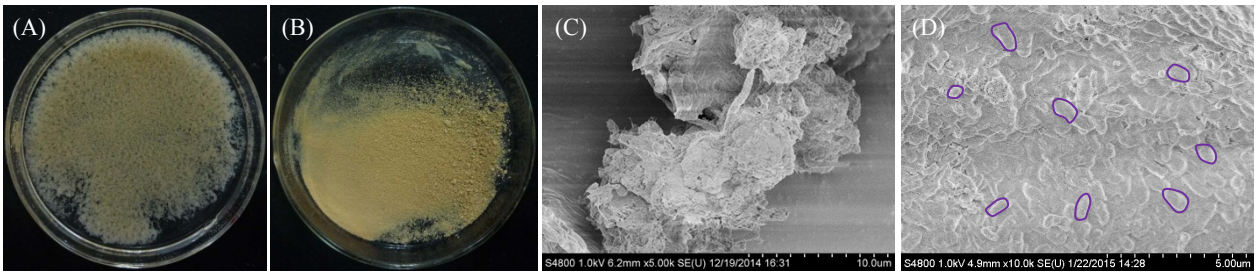

Figure S4. (A, B) Photographs of the wet and dry SF, respectively, which exhibited a flocculent morphology. (C, D) SEM images of SF with different magnifications, which indicated a foam-like structure via the conglomeration of numerous microorganisms (the purple circlets).

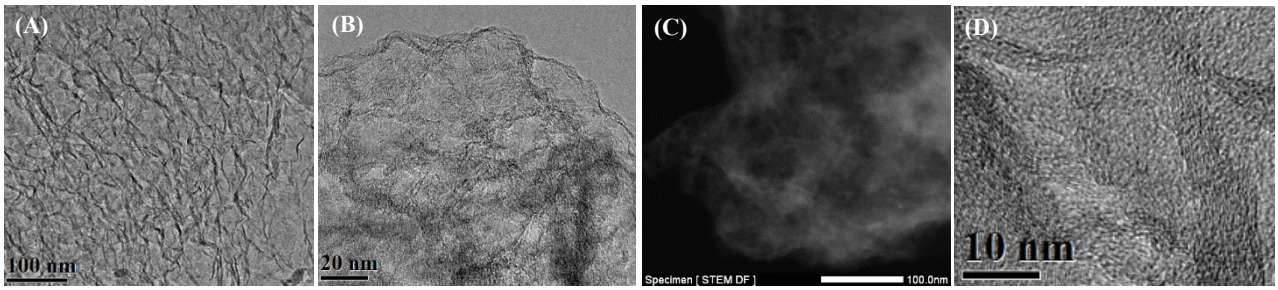

Figure S5. (A, B) TEM images of SF-NMGF with different magnifications. (C, D) STEM and HRTEM images of SF-NMGF, the lattice fringes in D proved the graphitization.

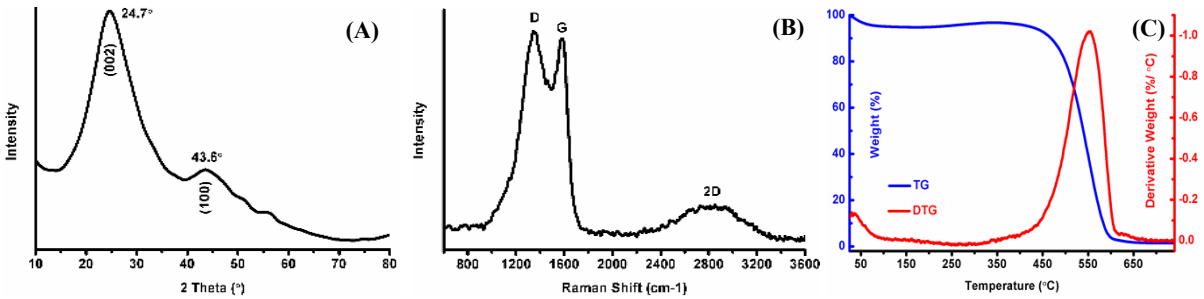

Figure S6. (A) XRD pattern, (B) Raman Spectra, (C) TG and DTG curves of SF-NMGF.

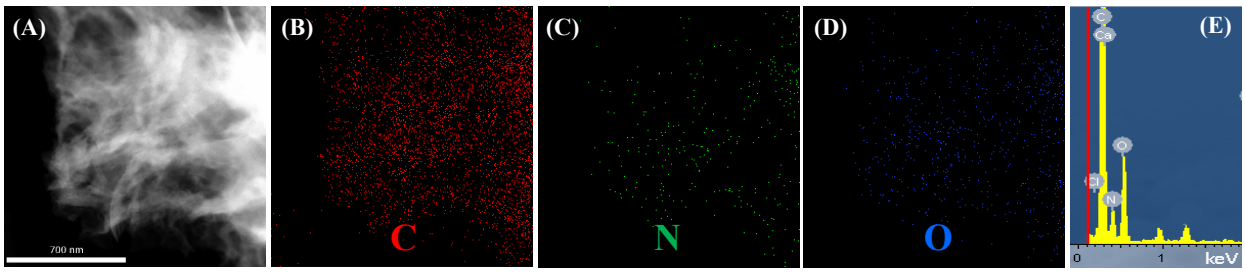

Figure S7. STEM image of SF-NMGF. (B-D) EDX mapping of carbon, nitrogen and oxygen elements, respectively. (E) EDX pattern of SF-NMGF, which also showed the signals of carbon, nitrogen and oxygen elements.

Table S1.

The compositions and contents of inorganic elements in the pyrolyzed SF by the ICP-AES measurement.

Elements	**Ca**	**Na**	**Mg**	**K**	**Fe**
Contents (wt%)	10.1	7.3	1.7	0.2	0.33

Table S2.

The added nutritional ingredients from active sludge to aerobic granules, where the SF were the byproducts of this preparation.

Constituent	concentration（g L^{-1}）
Peptone	0.4
Yeast extract	0.25
NH_4Cl	0.2
KH_2PO_4	0.66
$CaCl_2$	0.03
$MgSO_4$	0.025
$FeSO_4·7H_2O$	0.02
$NaHCO_3$	0.013
CH_3COONa	0.8
CH_3CH_2COONa	0.3

Table S3.

The compositions and contents of organic and inorganic elements in SF measured by elemental analyser, XPS and ICP-AES.

Elements	Organism						Inorganics						
	C	O	N	H	P	S	Ca	Na	Mg	K	Fe	Al	Zn
Contents (wt%)	34.5	18.6	7.6	5.5	2.2	0.6	3.4	4.1	0.45	1.7	0.2	0.008	0.007