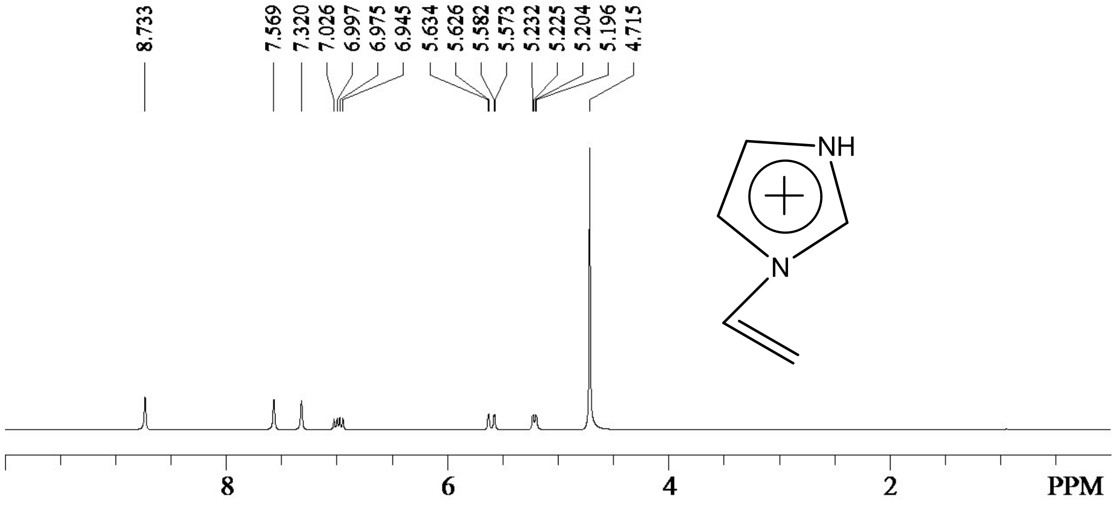
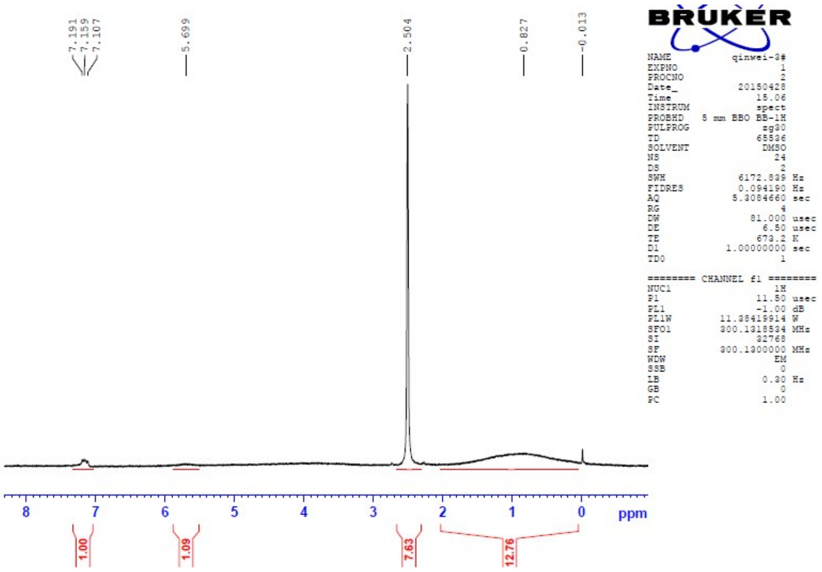
Electronic Supplementary Material (ESI) for Catalysis Science & Technology.

Polymerizable ionic liquid as precursor for N, P co-doped carbon toward oxygen reduction reaction



^{1}HNMR (500MHz, D_2O, 25°C): δ=8.73ppm (s, 1H; imidazole H), 7.57ppm (s, 1H; imidazole H) , 7.32ppm (s, 1H; imidazole H), 7.02~6.95ppm (m, 1H;$C\underline{H}= CH_2$), 5.63~5.57ppm (m, 2H; $CH=C\underline{H_2}$),5.23-5.19ppm (m, 2H;CH_3 $CH=C\underline{H_2}$)

Fig. S1a ^{1}HNMR for $[VHim]H_2PO_4$



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EXPNO                     1
PROCNO                    2
Date_              20150428
Time                  15.06
INSTRUM               spect
PROBHD   5 mm BBO BB-1H
PULPROG                zg30
TD                    65536
SOLVENT                DMSO
NS                       24
DS                        2
SWH            6172.839 Hz
FIDRES         0.094190 Hz
AQ            5.3084660 sec
RG                        4
DW              81.000 usec
DE                6.50 usec
TE               673.2 K
D1           1.00000000 sec
TD0                       1

======== CHANNEL f1 ========
NUC1                     1H
P1               11.50 usec
PL1              -1.00 dB
PL1W        11.38419914 W
SFO1        300.1318534 MHz
SI                    32768
SF          300.1300000 MHz
WDW                      EM
SSB                       0
LB                 0.30 Hz
GB                        0
PC                     1.00
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Fig. S1b ^{1}HNMR for $[HVim]H_2PO_4$ after pyrolyzed with DMSO as solvent.

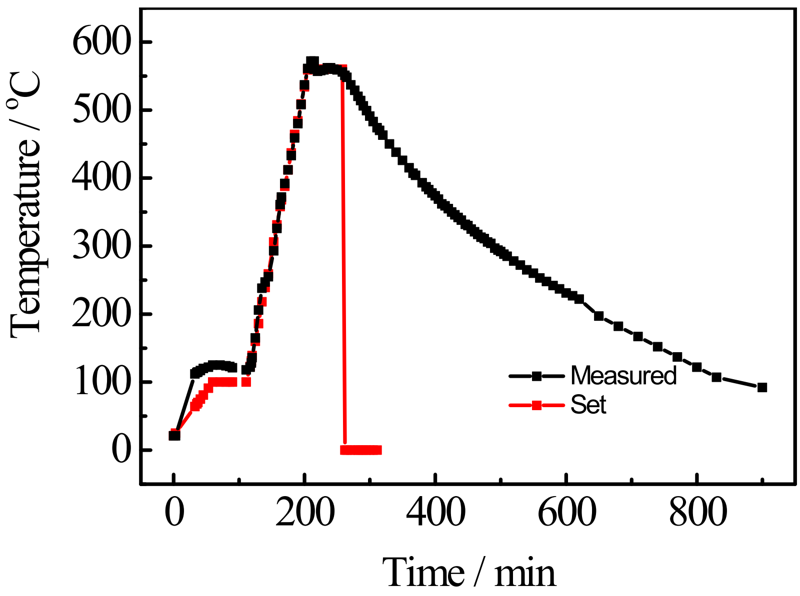

Fig. S2 Temperature-time curve of the furnace for the preparation of the C1.

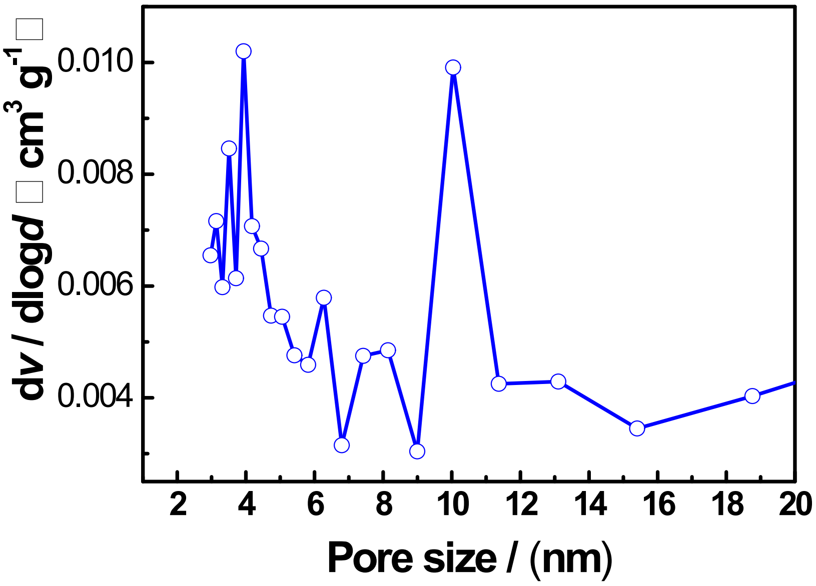

Fig. S3 The pore size distribution of C_1, confirming the formation of mesoporous structure. Of course, the amount of mesopore was less and thus displayed low specific surface areas.

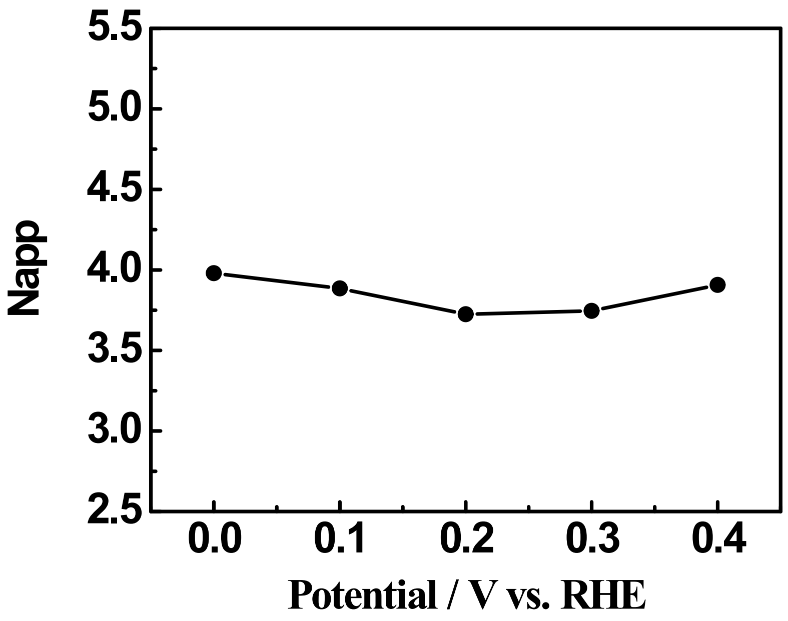

Fig. S4 The relationship of the Napp versus the potential.

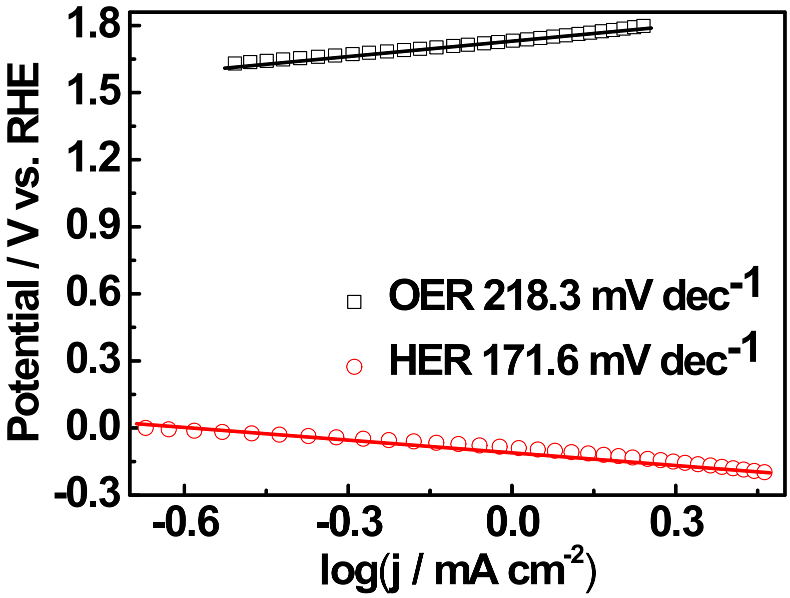

Fig. S5 Tafel plots for the HER and OER of C1.

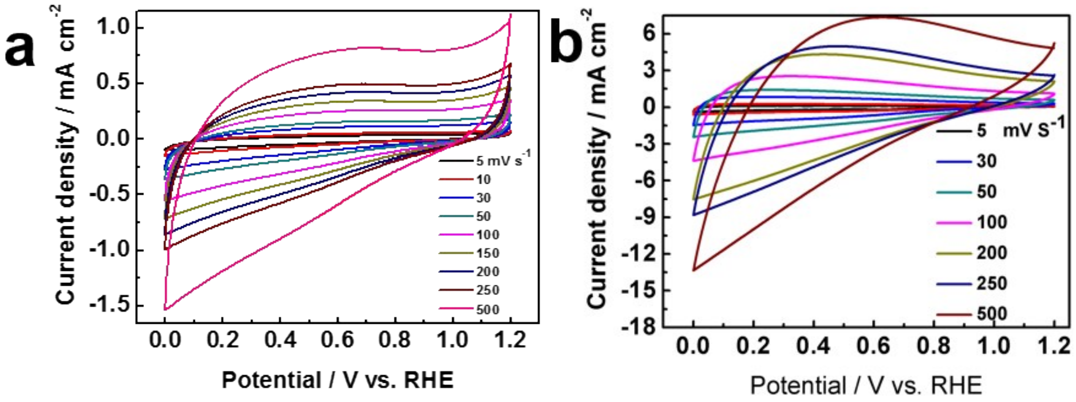

Fig. S6 CV curves scanned at various scanning rate under N_2: (a) C_1, (b) C_2.

Reference

1 S. Wang, D. Yu, L. Dai, *J. Am. Chem. Soc.,* 2011, **133**, 5182.