Electronic Supplementary Material (ESI) for Nanoscale.

Supporting Information

Defective Porous Carbon Microrods Derived from Fullerenes (C_{70}) as High-performance Electrocatalysts for Oxygen Reduction Reaction

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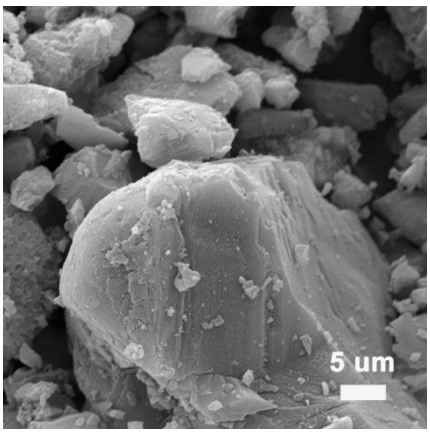

Figure S1 SEM image of pristine C_{70} powder

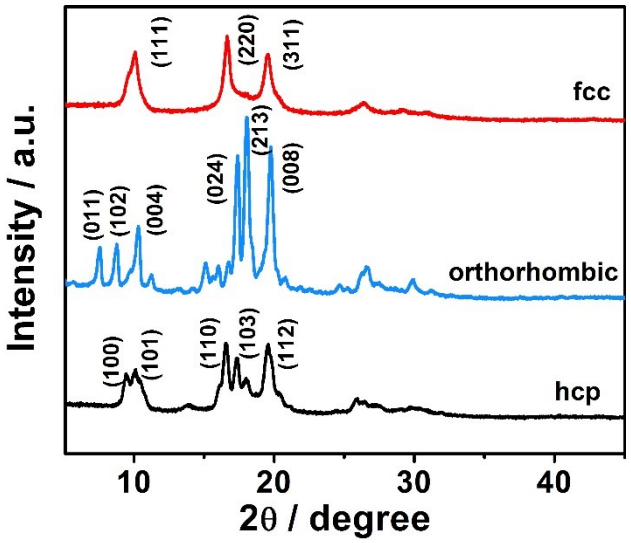

Figure S2 XRD patterns of pristine C_{70} powder (black), C70MRs (blue) and C70MRs-800 (red).

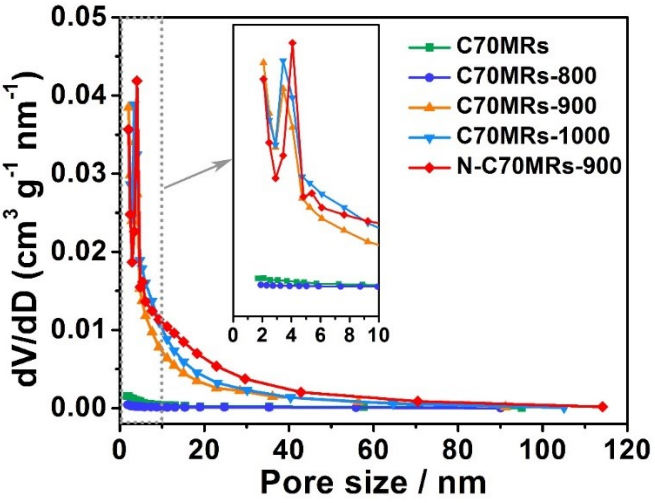

Figure S3 Pore size distributions of the as-prepared samples.

Table S1 Specific surface area and average pore size of different samples

Catalysts	Specific surface area (m^2 g^{-1})	Average pore size (nm)
C70MRs	11	1.3
C70MRs-800	33	1.4
C70MRs-900	620	3.6
C70MRs -1000	709	3.6
N-C70MRs-900	846	3.8

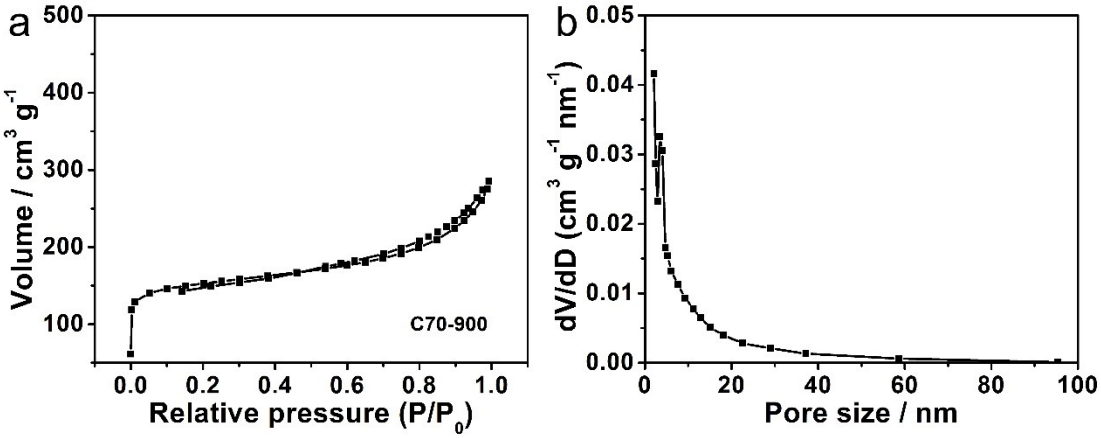

Figure S4 (a) N_2 adsorption/desorption isotherm and (b) pore size distribution of C70-900.

Table S2 Surface compositions of different samples.

Catalysts	C (at. %)	O (at.%)	N (at.%)
C70MRs	97.54	2.46	0
C70MRs-800	97.48	2.52	0
C70MRs-900	94.77	5.23	0
C70MRs -1000	94.97	5.03	0
N-C70MRs-900	93.07	5.15	1.78

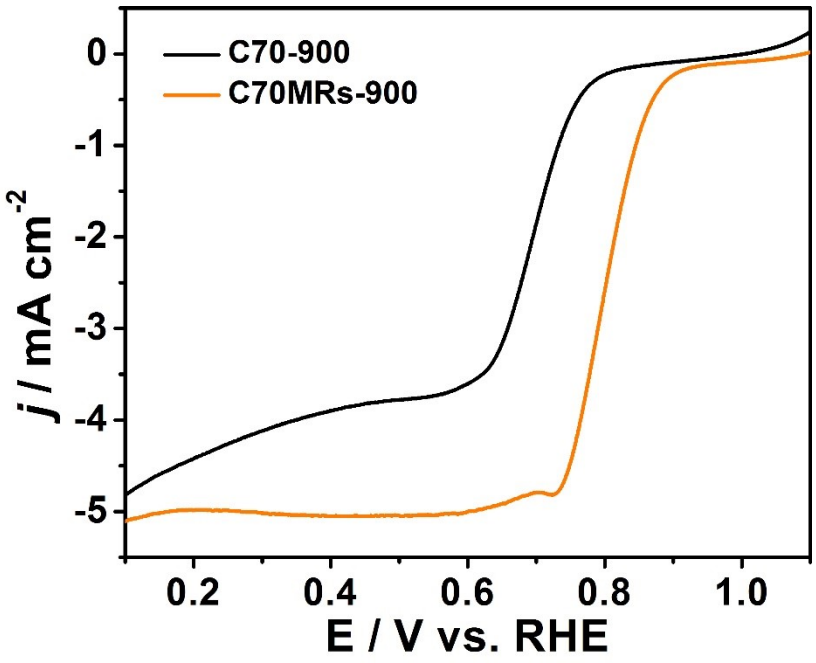

Figure S5 LSV curves of C70-900 and C70MRs-900 at a scan rate of 10 mV s^{-1} and a rotation speed of 1600 rpm in 0.1 M KOH electrolyte.

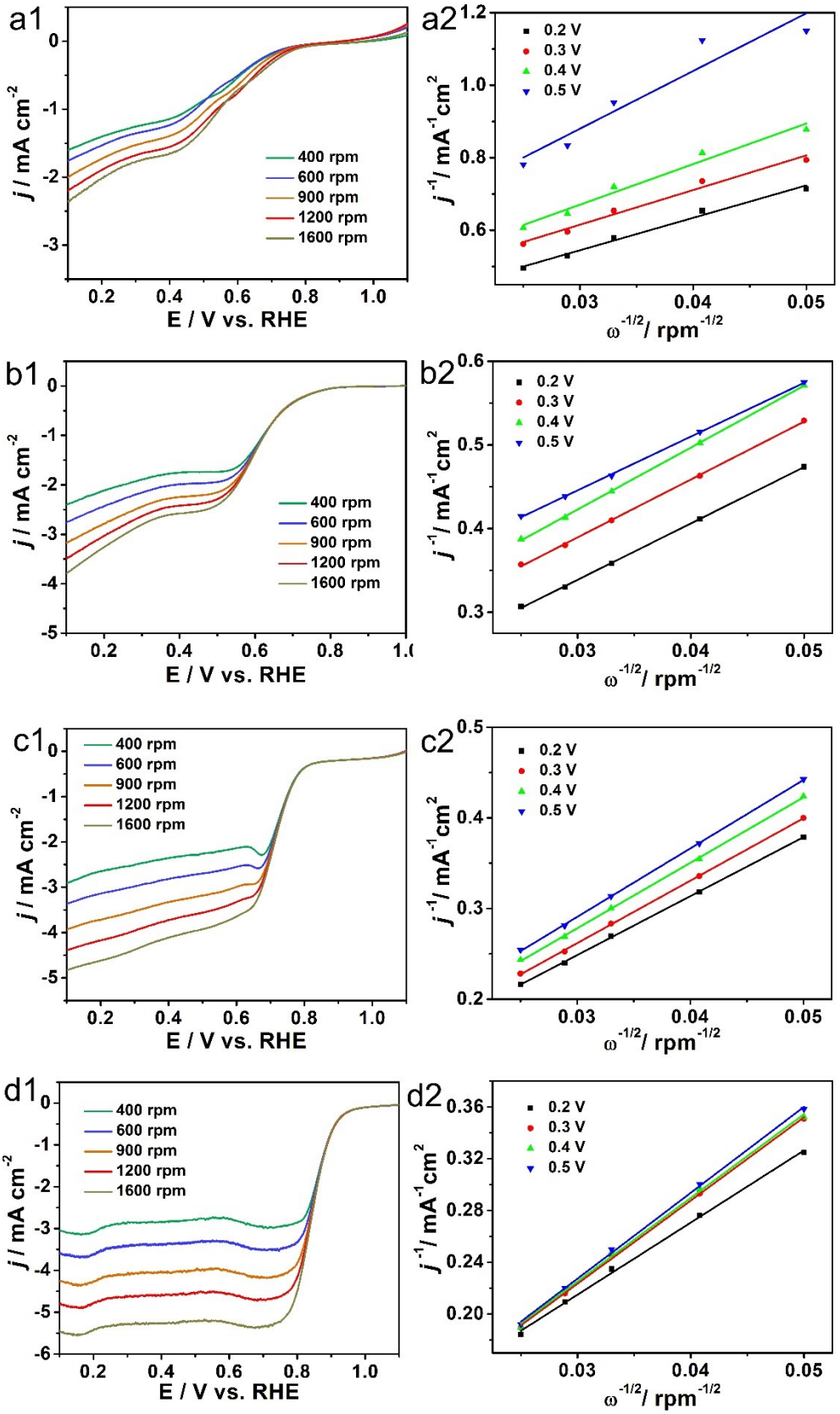

Figure S6 (a1-d1) LSV curves of C70MRs, C70MRs-800, C70MRs-1000 and 20% Pt/C catalysts at different rotation speeds in the range of 400 to 1600 rpm in 0.1 M KOH electrolyte, and (a2-d2) the corresponding K-L plots.

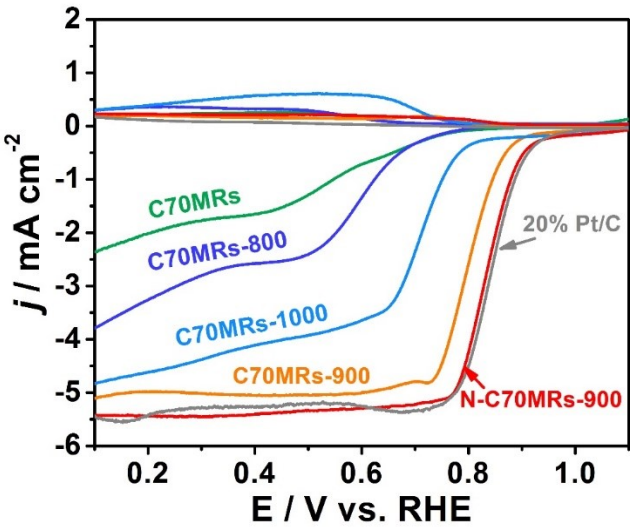

Figure S7 RRDE measurements of the as-prepared samples and 20% Pt/C at a scan rate of 10 mV s^{-1} and a rotation speed of 1600 rpm in 0.1 M KOH solution.

Table S3 Comparison of the ORR performance of C70MRs-900 and N-C70MRs-900 with recently reported metal-free catalysts in 0.1 M KOH solution.

Catalyst	E_0 (V)	$E_{1/2}$ (V)	J_L (mA cm^{-2})	Ref.
C70MRs-900	**0.981**	**0.802**	**-5.11**	**This work**
N-C70MRs-900	**1.076**	**0.836**	**-5.42**	**This work**
$NOPHC_{10}$-900	0.90	0.77	-4.2	S1
NCN-1000-5	0.95	0.82	-6.43	S2
N-CNT-3h	0.95	0.83	-	S3
N-hG6	0.91	0.833	-5.28	S4
NKCNPs-900	0.92	0.79	-5.31	S5
HHPC	0.90	0.78	-5.34	S6
CF	1.02	0.87	-	S7
PD/N-C	0.911	0.833	-5.29	S8
D/G-CTs-1000	-	0.841	-6.83	S9
MFC_{60}-130	0.82	0.76	-	S10
DN-UGNR	0.957	0.808	-	S11
ND-GLC	0.991	0.875	-	S12
N-CNSP	0.96	0.85	-6.1	S13

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