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Fabrication and electrocatalytic performance of highly stable and active platinum nanoparticles supported on nitrogen-doped ordered mesoporous carbons for oxygen reduction reaction

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Table S1 Physical properties of various SBA-15-N*y* samples

Sample	*y* (mol%)[a]	N content (wt%)[b]	S_{BET} (m^2/g)[c]	*d* (nm)[d]	V_{Tot} (cm^3/g)[e]
SBA-15-N0	0	0	684	8.0	1.15
SBA-15-N10	10	2.7	487	6.9	0.81
SBA-15-N20	20	3.8	400	6.7	0.64
SBA-15-N30	30	4.5	126	6.2	0.28
SBA-15-N40	40	5.5	18	ND	0.10

[a] *y* = TA/(TEOS+TA).
[b] Nitrogen contents measured by elemental analysis.
[c] Brunauer–Emmet–Teller (BET) surface areas.
[d] Pore diameters derived by the Barrett–Joyner–Halenda (BJH) method using the adsorption branches.
[e] Total pore volumes calculated as the amount of N_2 adsorbed at a relative pressure of 0.99.

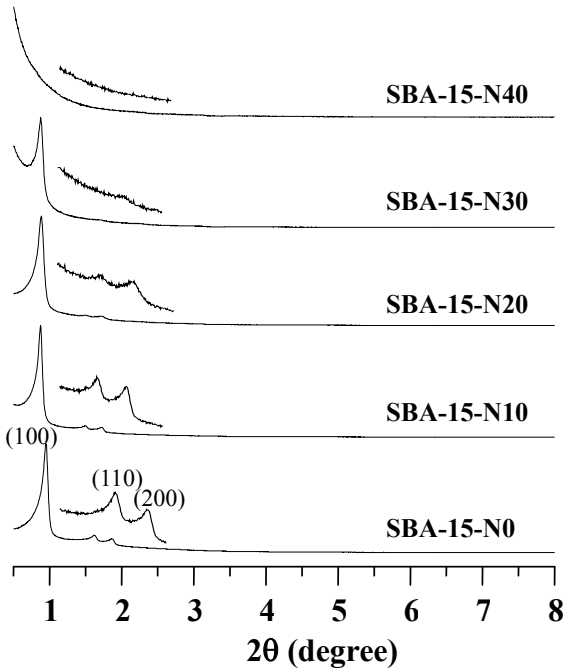

Fig. S1 Small-angle powder XRD patterns of various SBA-15-N*y* samples.

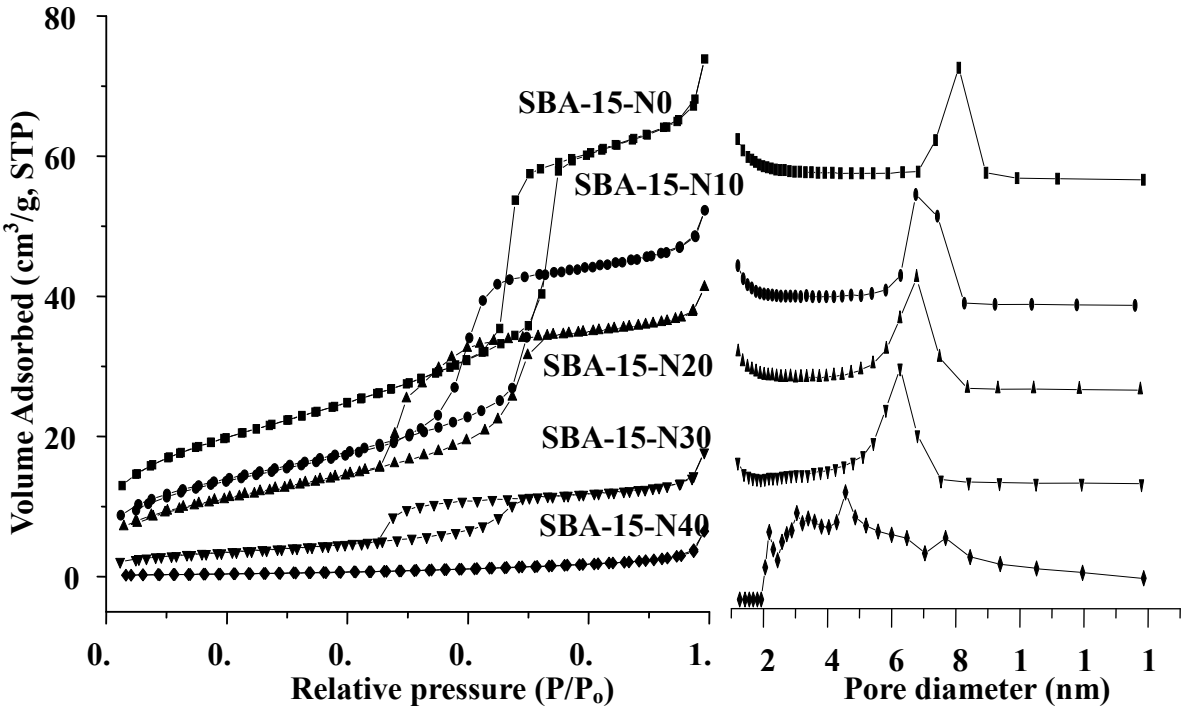

Fig. S2 N_2 adsorption/desorption isotherms (left) and corresponding pore size distribution (right) of various SBA-15-N*y* samples.

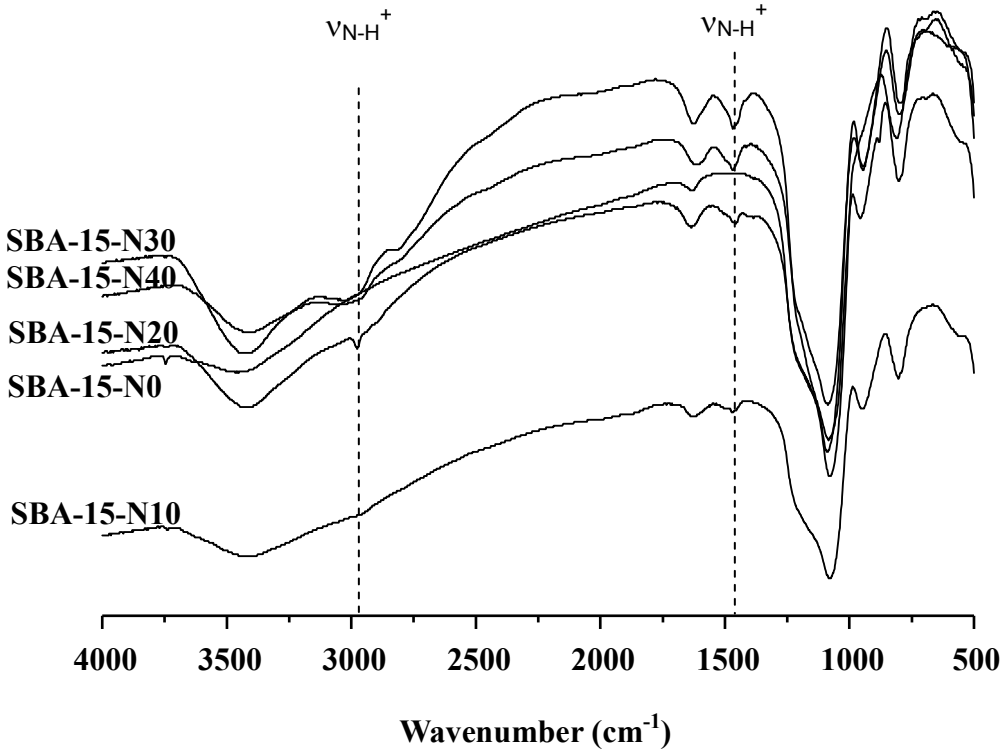

Fig. S3 FTIR spectra of various SBA-15-N*y* samples.

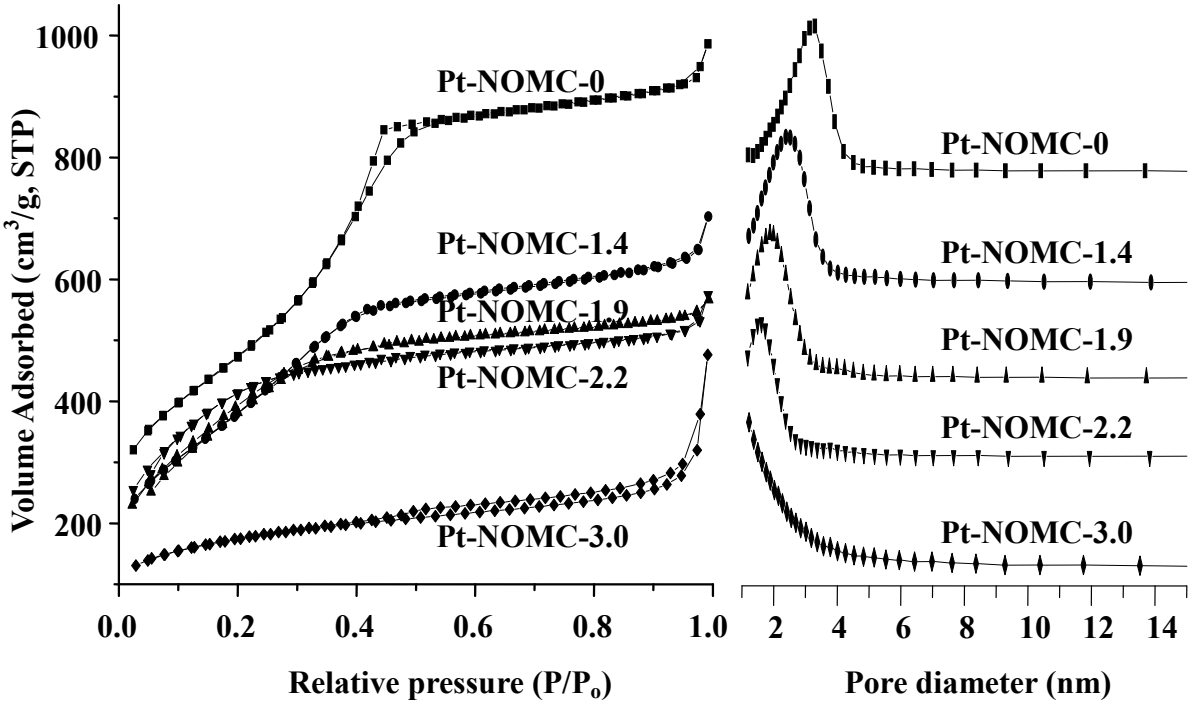

Fig. S4 N_2 adsorption/desorption isotherms (left) and corresponding pore size distribution (right) of various Pt-NOMC-*x* samples.

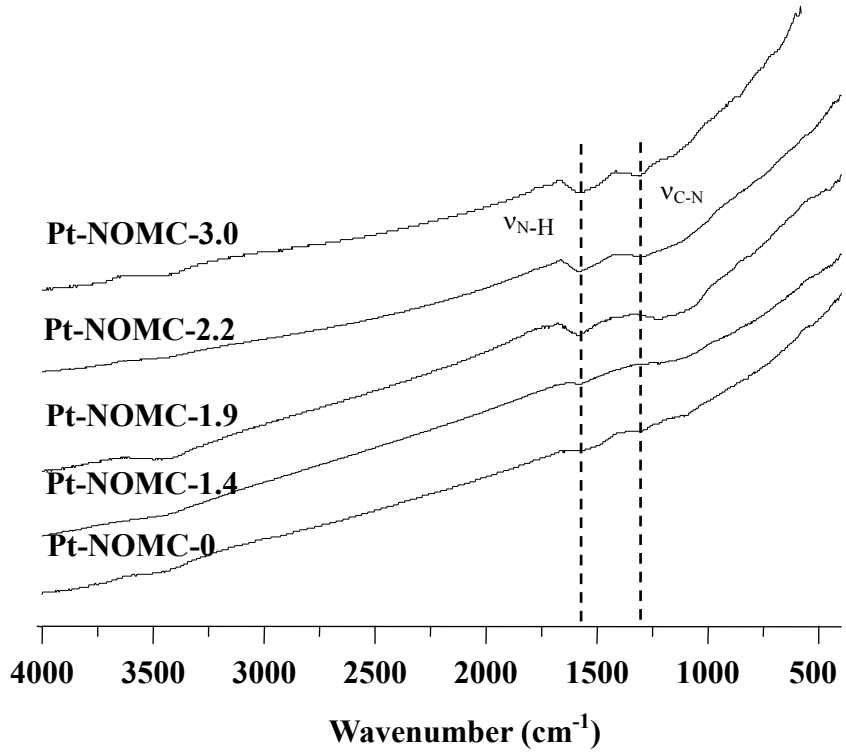

Fig. S5 FTIR spectra of various Pt-NOMC-*x* samples.

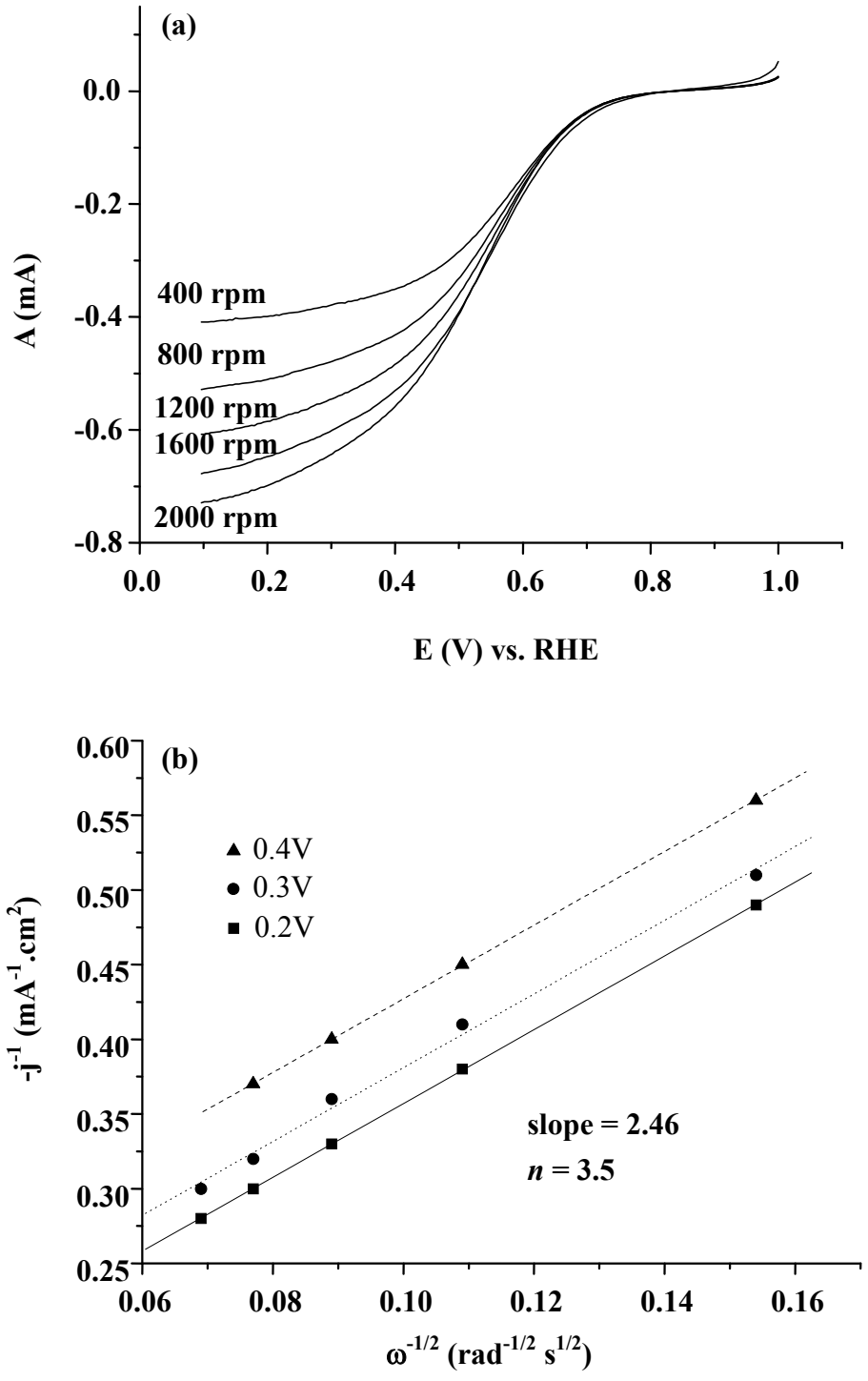

Fig. S6 (a) Oxygen reduction reaction on Pt-NOMC-0 electrode in O_2 saturated 0.1 M H_2SO_4 solution at room temperature and different rotating rates and (b) the corresponding Koutecky-Levich plots at different potentials. The current densities were calculated by Eqs. 1-3 depicted in the main text.

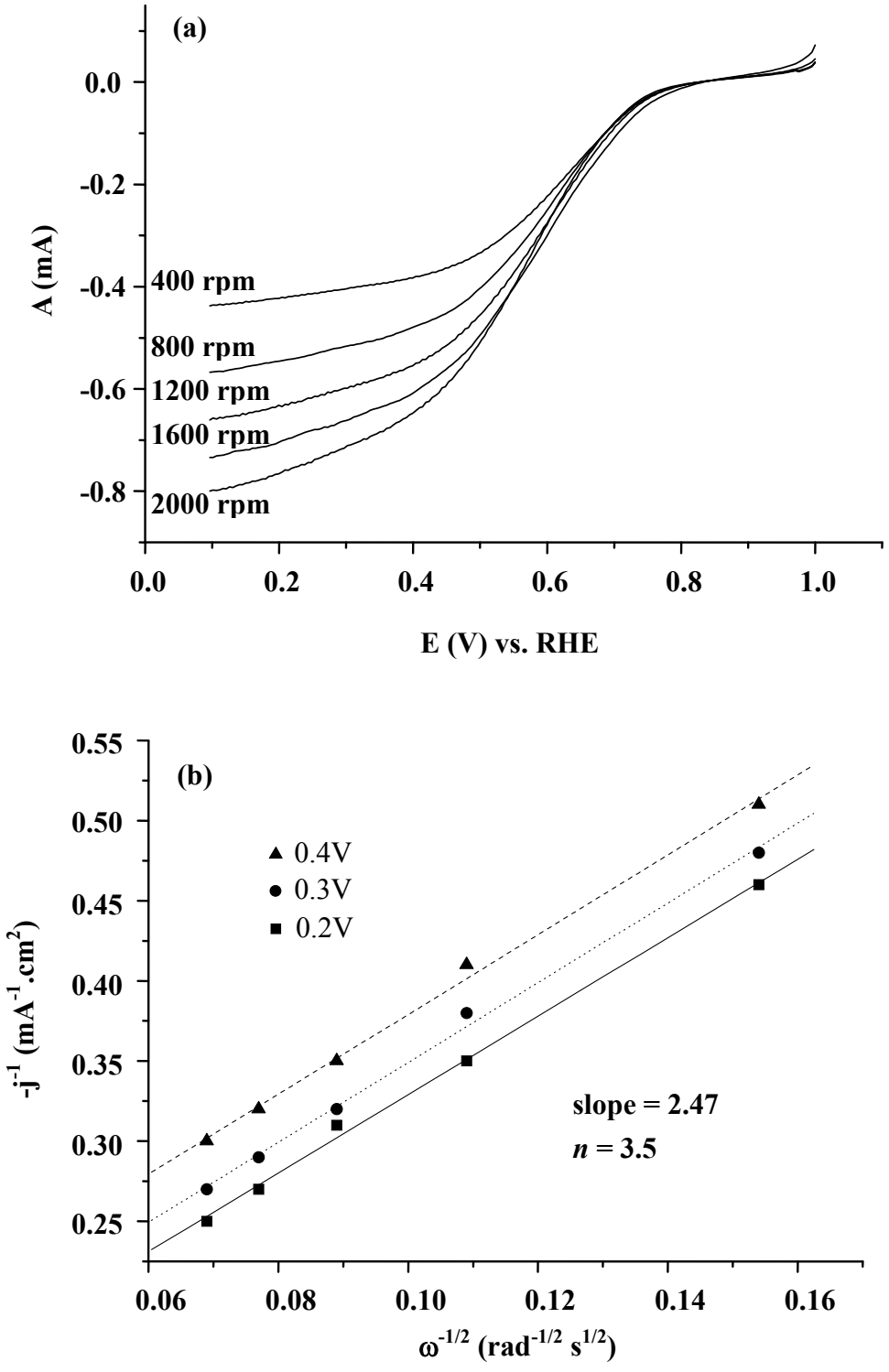

Fig. S7 (a) Oxygen reduction reaction on Pt-NOMC-1.4 electrode in O_2 saturated 0.1 M H_2SO_4 solution at room temperature and different rotating rates and (b) the corresponding Koutecky-Levich plots at different potentials. The current densities were calculated by Eqs. 1-3 depicted in the main text.

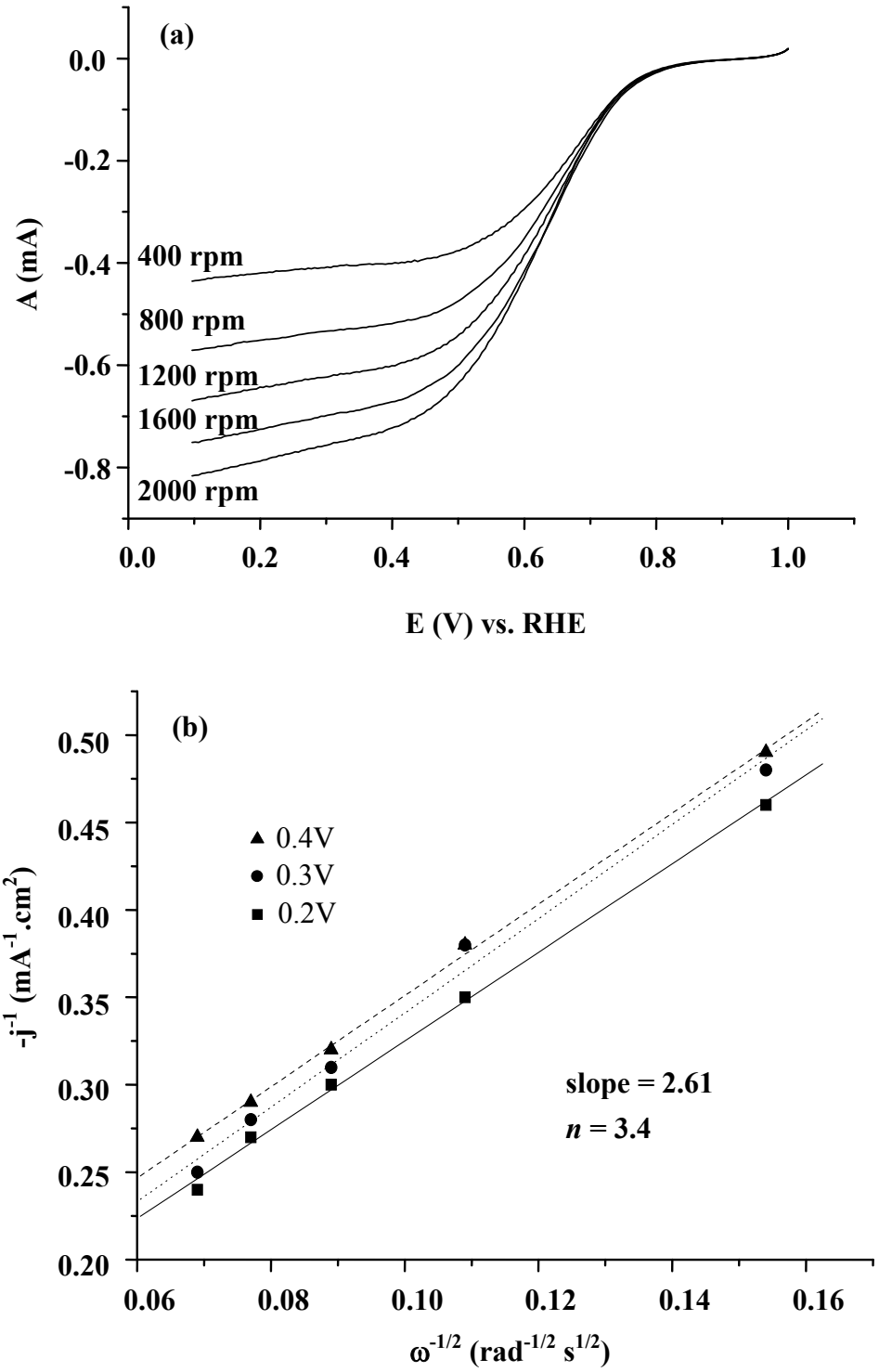

Fig. S8 (a) Oxygen reduction reaction on Pt-NOMC-1.9 electrode in O_2 saturated 0.1 M H_2SO_4 solution at room temperature and different rotating rates and (b) the corresponding Koutecky-Levich plots at different potentials. The current densities were calculated by Eqs. 1-3 depicted in the main text.

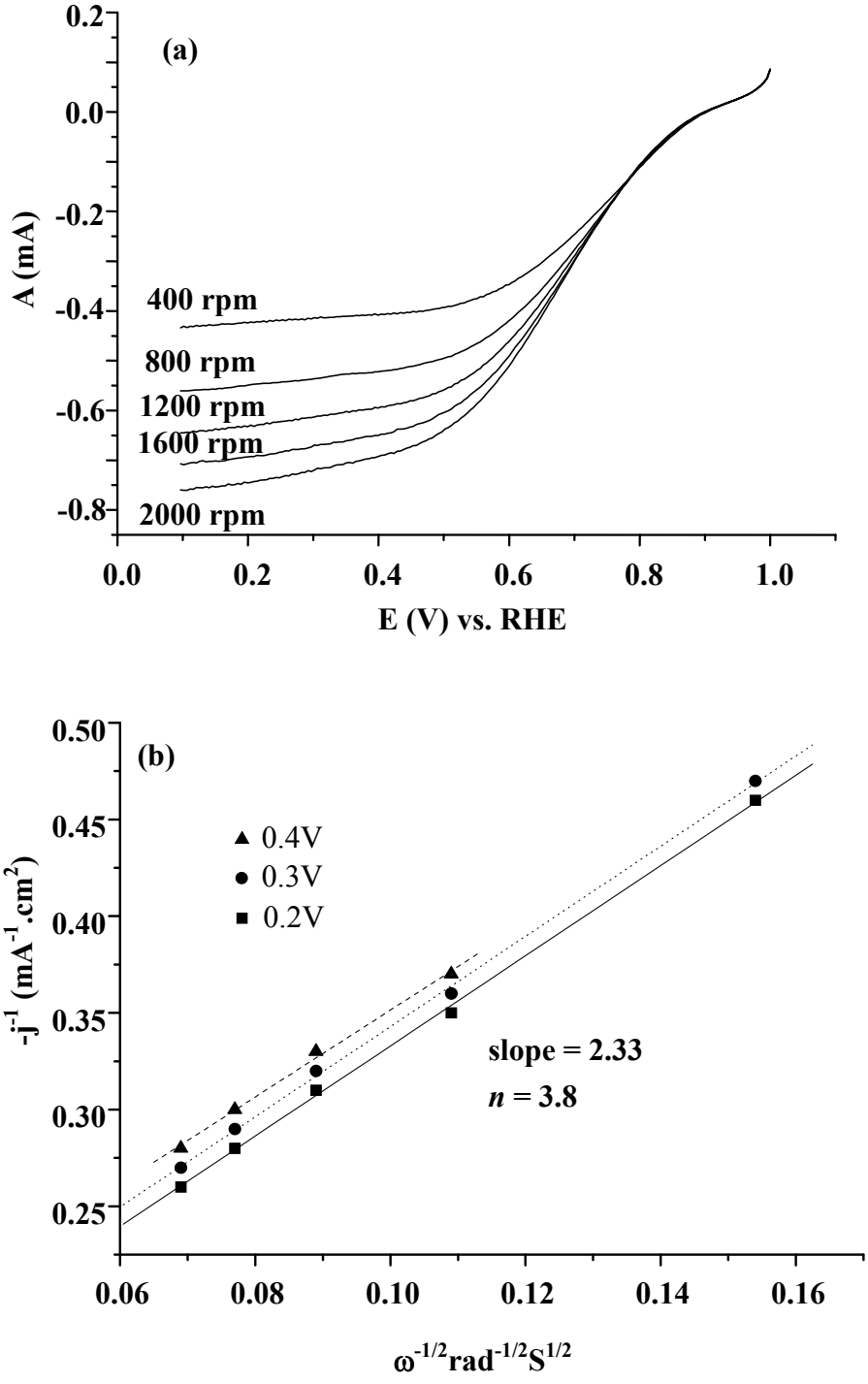

Fig. S9 (a) Oxygen reduction reaction on Pt-NOMC-2.2 electrode in O_2 saturated 0.1 M H_2SO_4 solution at room temperature and different rotating rates and (b) the corresponding Koutecky-Levich plots at different potentials. The current densities were calculated by Eqs. 1-3 depicted in the main text.

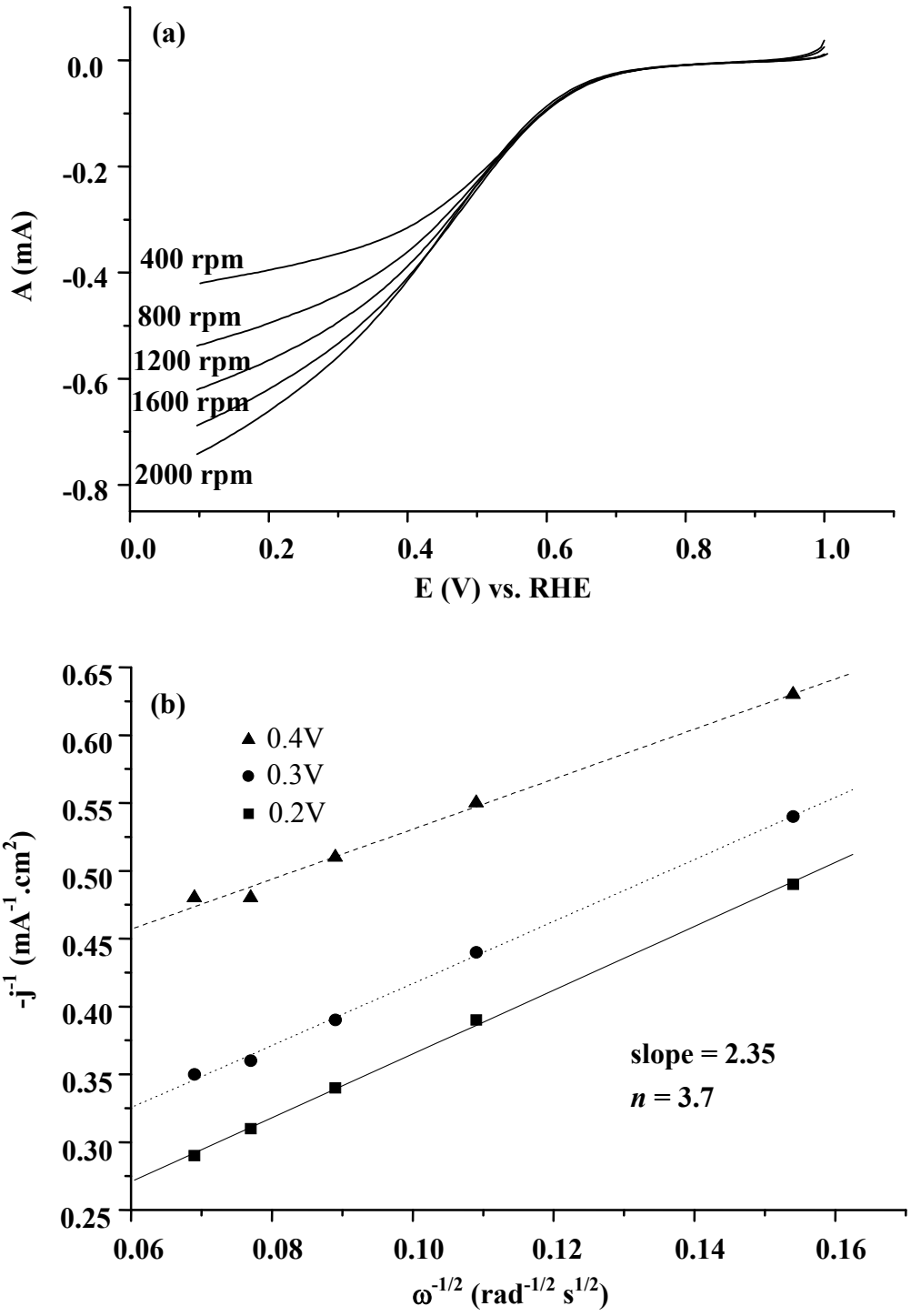

Fig. S10 (a) Oxygen reduction reaction on Pt-NOMC-3.0 electrode in O_2 saturated 0.1 M H_2SO_4 solution at room temperature and different rotating rates and (b) the corresponding Koutecky-Levich plots at different potentials. The current densities were calculated by Eqs. 1-3 depicted in the main text.

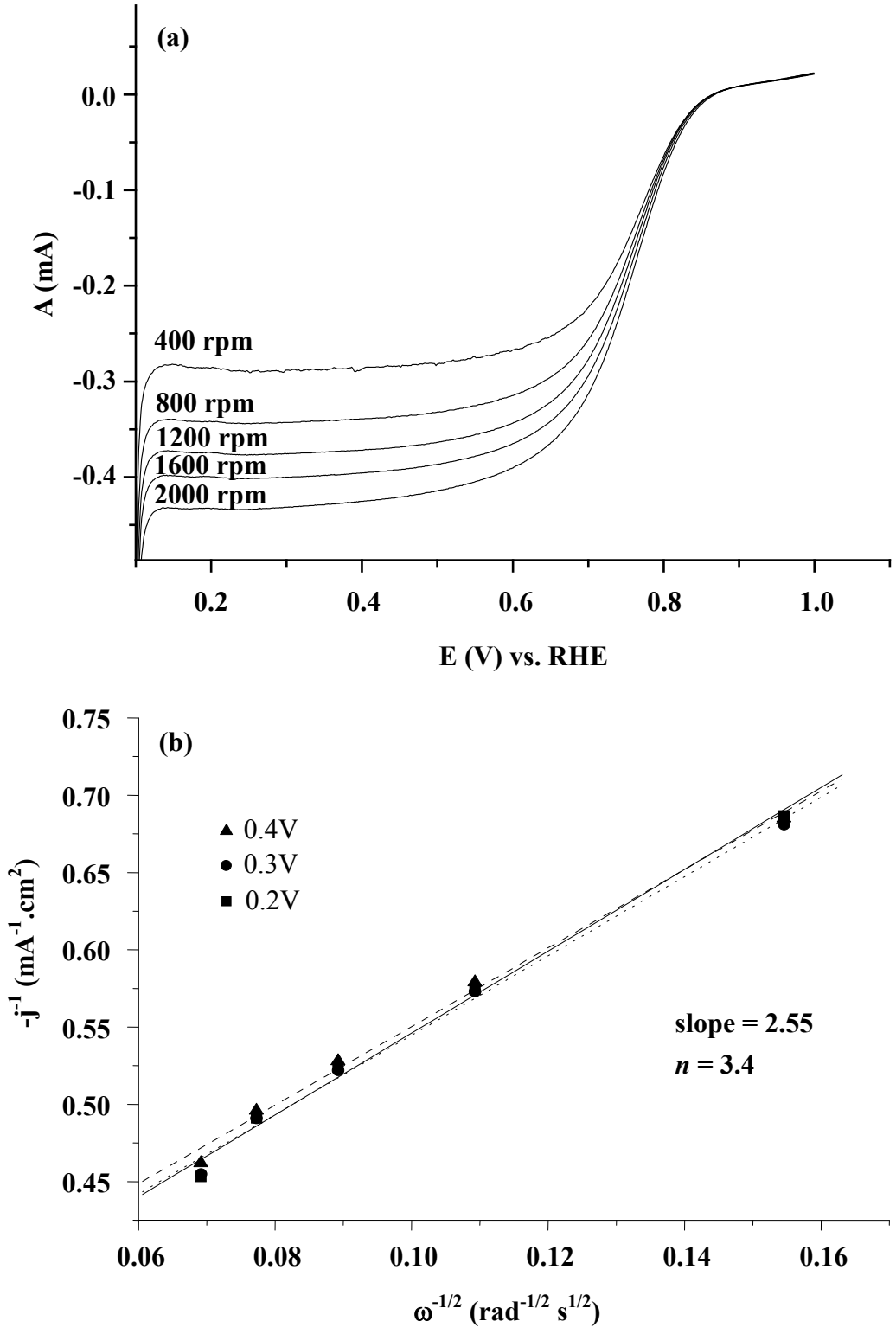

Fig. S11 (a) Oxygen reduction reaction on JM-Pt/C electrode in O_2 saturated 0.1 M H_2SO_4 solution at room temperature and different rotating rates and (b) the corresponding Koutecky-Levich plots at different potentials. The current densities were calculated by Eqs. 1-3 depicted in the main text.