

Supporting Information

## **Exploration of the active center structure of nitrogen-doped graphene-based catalysts for oxygen reduction reaction**

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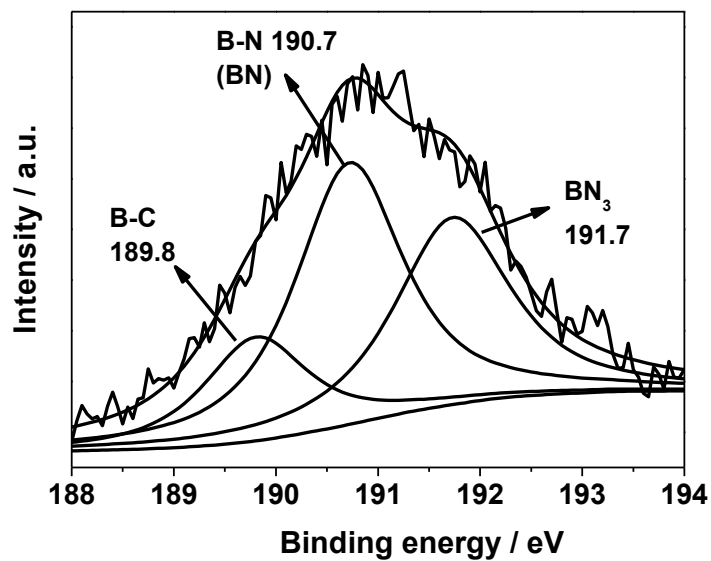


Figure S1. B1s spectra of BN-RG-O.

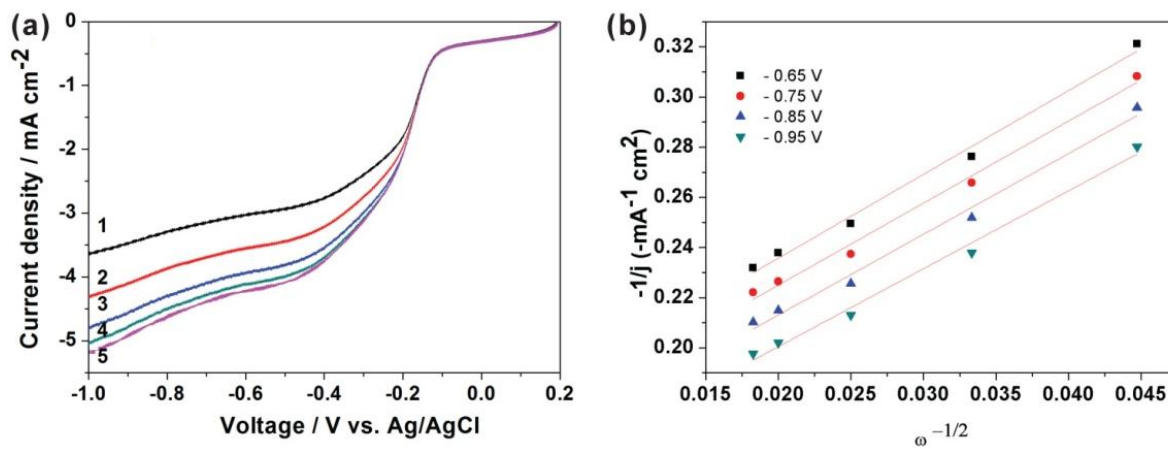
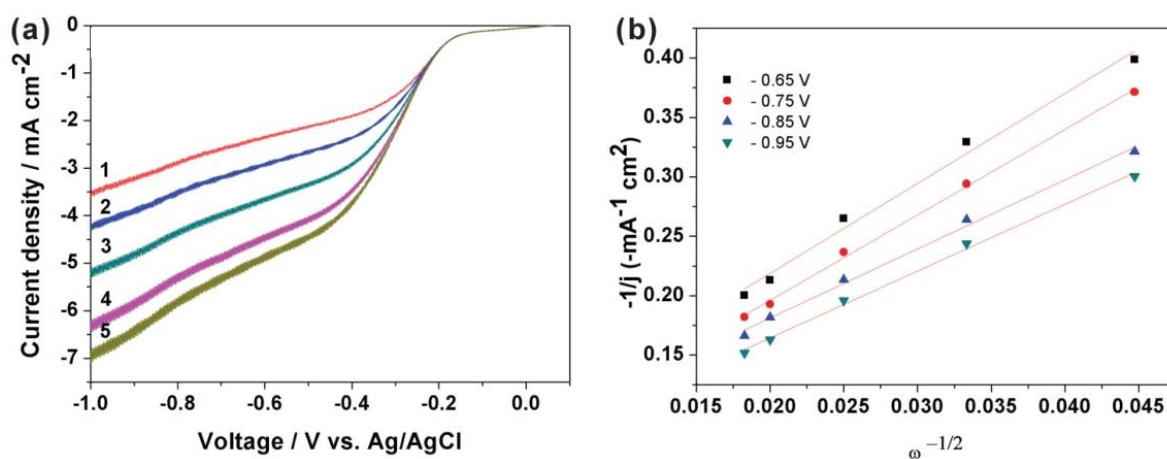
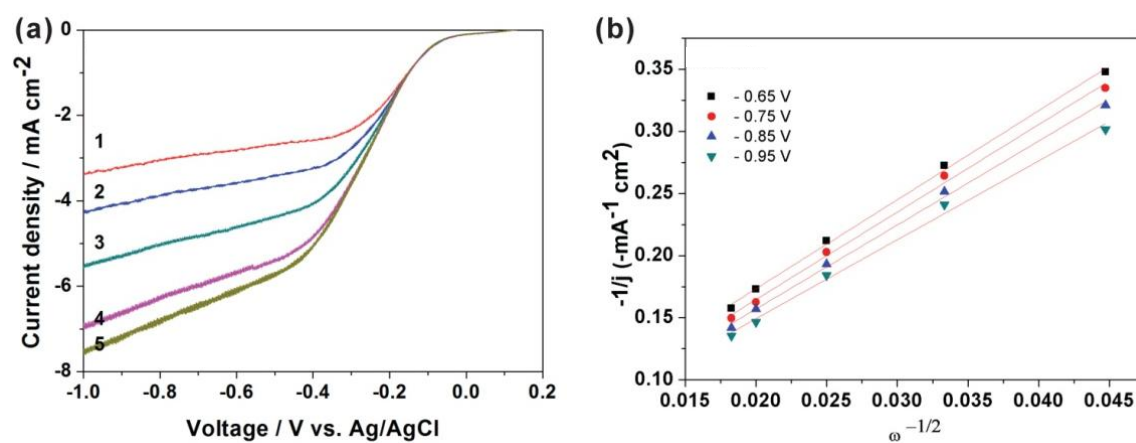


Figure S2. Linear sweep voltammograms and Koutecky-Levich plots for BN-RG-O with rotation rate from 100 to 3000 rpm in 0.1 M KOH.



**Figure S3.** Linear sweep voltammograms and Koutecky-Levich plots for N-RG-O 550°C with rotation rate from 100 to 3000 rpm in 0.1 M KOH.



**Figure S4.** Linear sweep voltammograms and Koutecky-Levich plots for N-RG-O 850°C with rotation rate from 100 to 3000 rpm in 0.1 M KOH.

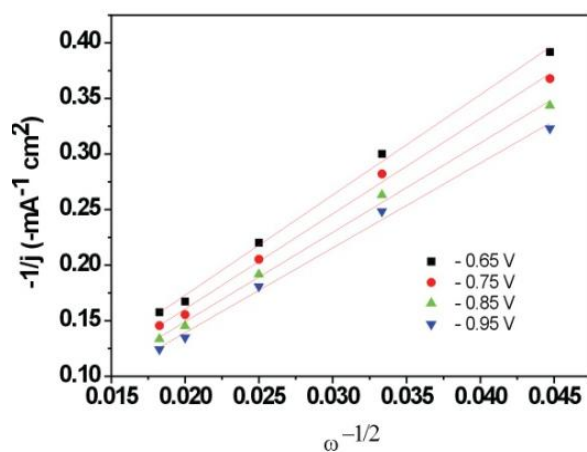


Figure S5. Koutecky-Levich plots for N-RG-O 1000°C with rotation rate from 100 to 3000 rpm in 0.1 M KOH.

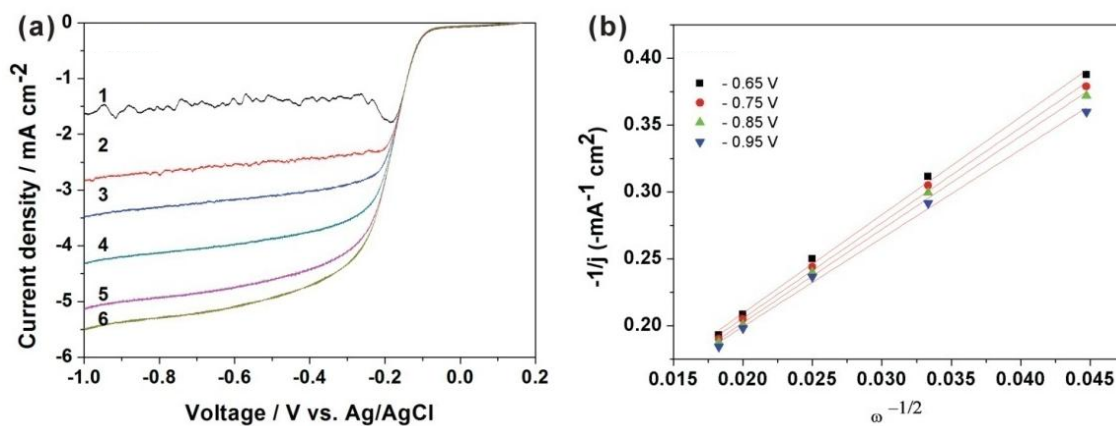
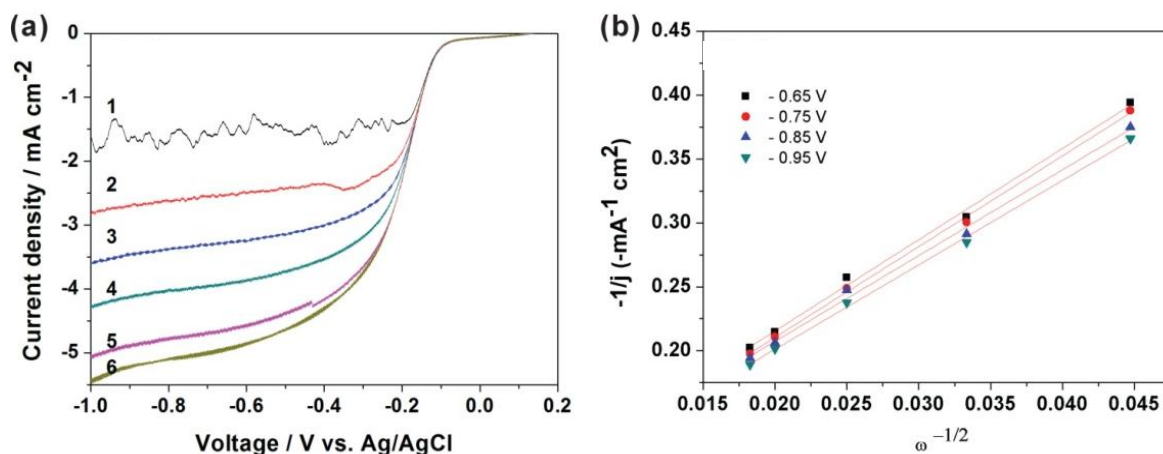
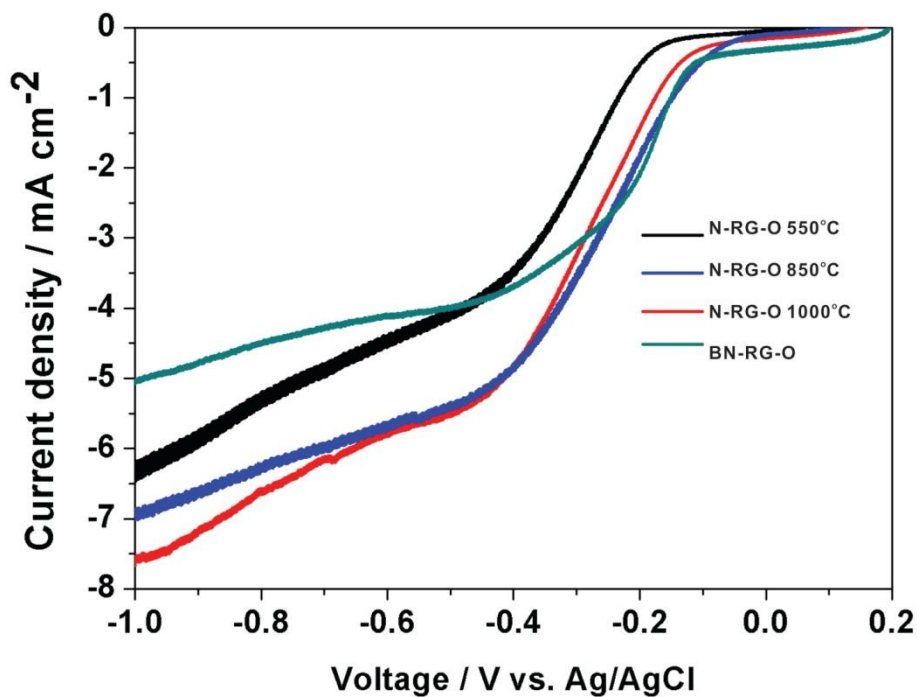


Figure S6. Linear sweep voltammograms and Koutecky-Levich plots for PANi-RG-O with rotation rate from 100 to 3000 rpm in 0.1 M KOH.



**Figure S7.** Linear sweep voltammograms and Koutecky-Levich plots for PANi-RG-O with rotation rate from 100 to 3000 rpm in 0.1 M KOH.



**Figure S8.** Linear sweep voltammograms of N-RG-O and BN-RG-O in 0.1 M KOH at a rotating rate of 2500 rpm.