

Supporting Information

Nitrogen- and Phosphorus-Doped Biocarbon with Enhanced Electrocatalytic Activity for Oxygen Reduction

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The thermogravimetric analysis (TGA) of the sample was performed on PerkinElmer TGA7 in air from room temperature to 950 °C with a heating rate of 5 °C min⁻¹. It was calibrated with calcium oxalate.

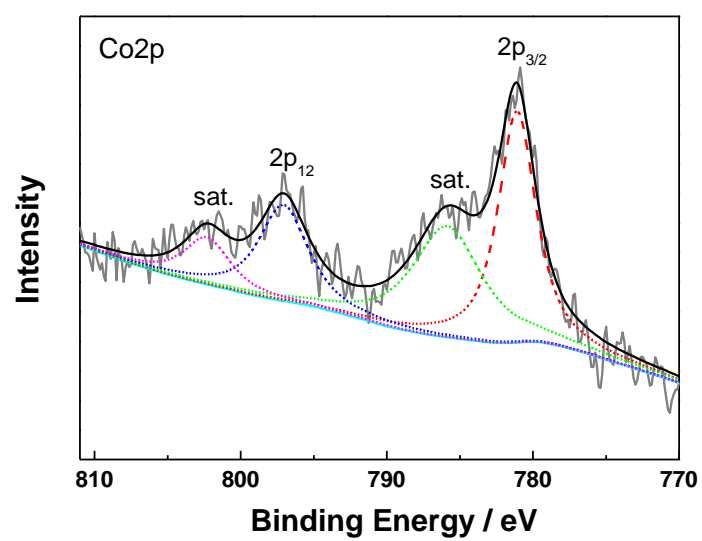


Figure S1. XPS spectrum for the Co 2p of Co-BC.

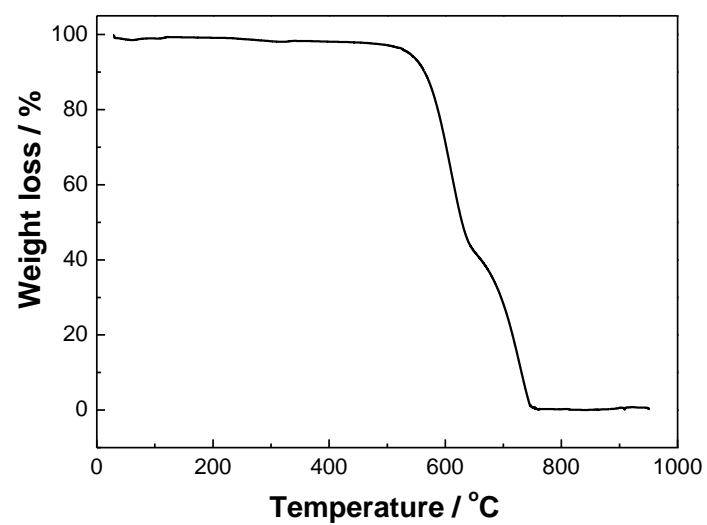


Figure S2. Thermogravimetric analysis of BC*.

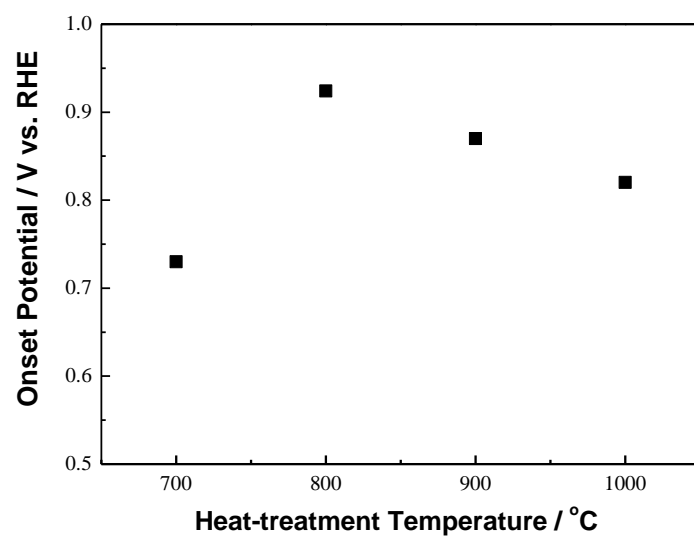


Figure S3. The dependence of the onset potential of BC* for ORR on the heat-treatment temperature.

Table S1 The dependence of N and P content in BC* on the heat-treatment temperature

| Heat-treatment temperature (°C) | N content (%) | Pyridinic N/ total N (%) | Pyrrolic N/ total N (%) | P content (%) | P-C/total P (%) | P-O/total P (%) |
|------------------------------------|------------------|-----------------------------|----------------------------|------------------|--------------------|--------------------|
| Precursor | 8.67 | / | / | 1.04 | / | / |
| 700 | 6.10 | 54.48 | 45.52 | 1.37 | 59.50 | 40.50 |
| 800 | 5.16 | 54.41 | 45.59 | 1.94 | 59.53 | 40.47 |
| 900 | 4.73 | 54.39 | 45.61 | 1.60 | 59.58 | 40.42 |
| 1000 | 3.02 | 54.44 | 45.56 | 1.13 | 59.56 | 40.44 |