

Carbonisation Temperature Dependence of Electrochemical Activity of Nitrogen-Doped Carbon Fibres from Electrospinning as Air-Cathode for Aqueous-Alkaline Metal–Air Batteries — Supporting Information

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1 SEM image of 400 °C sample

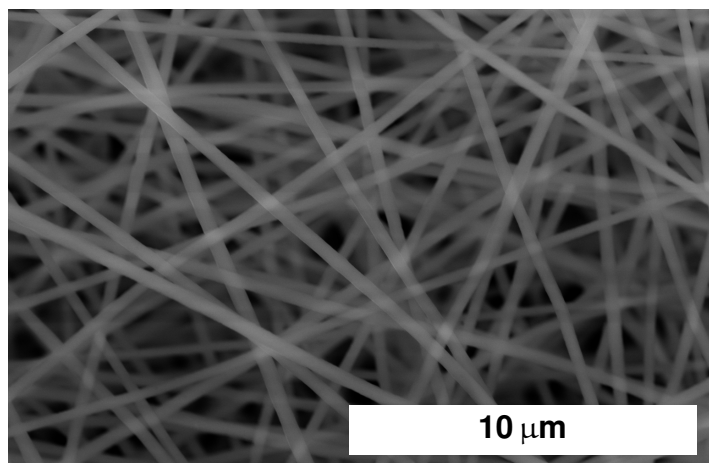


Figure S 1 SEM image of electrospun PAN fibres after stabilisation in air at 250 °C and carbonisation under argon at 400 °C.

2 XPS N1s range

In this section the detailed overview of the N1s range of the XPS spectra is shown in more detail as an addition to Figure 4 of the paper.

Figure S 2 shows the N1s range of the XPS spectra for fibres carbonised at low temperatures. These were fitted with only three peaks, as a differentiation between N-oxides and graphitic nitrogen is not possible for these samples. This is reflected in the corresponding Figures 5 and 6 in the paper.

Figure S 3 shows the N1s range of the XPS for a larger number of samples. The trends summarised in Figure 6 in the paper can be retraced in this more detailed overview.

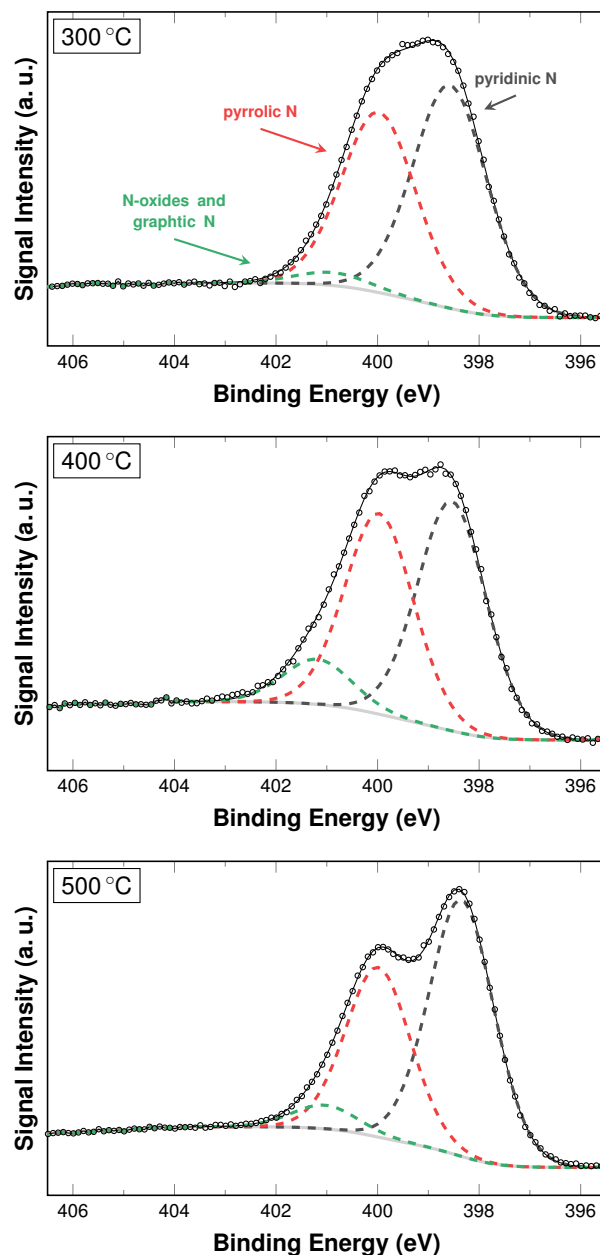


Figure S 2 N1s range of XPS spectra for carbonisation temperatures below 600 °C fitted with three nitrogen species.

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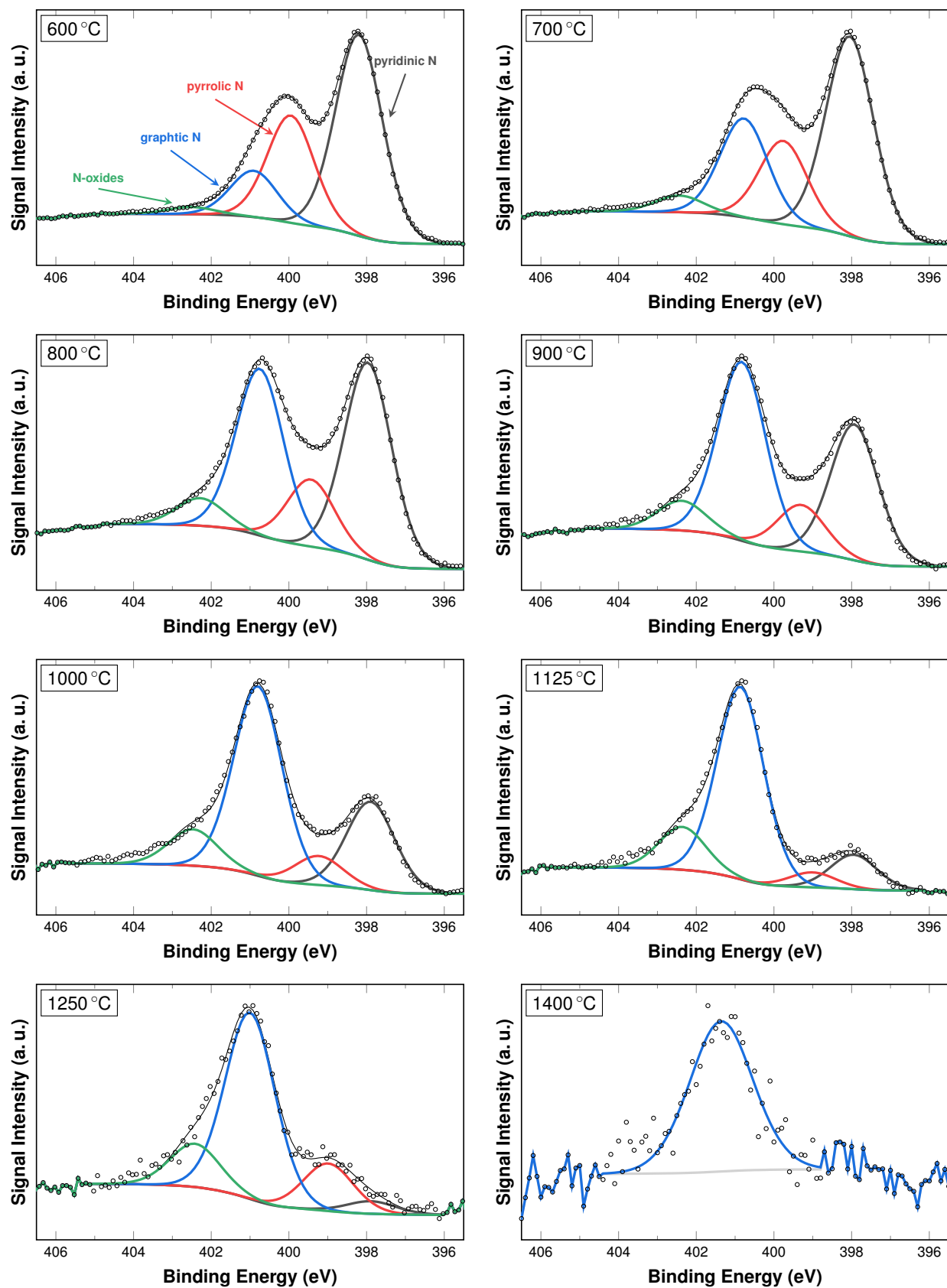


Figure S3 N1s range of XPS spectra for carbonisation temperatures above 600 °C fitted with four nitrogen species.

3 XPS C1s range

To support the statements made concerning the conductivity and general structure of the carbon backbone, the C1s range of the XPS spectra was analysed. Due to the nature of the C signal, which is a superposition of many C peaks caused by the numerous species that lie in a very narrow range of binding energies, interpreting the C1s data is challenging.

Figure S4 displays the same overview as Figure 10 with all deconvoluted species.

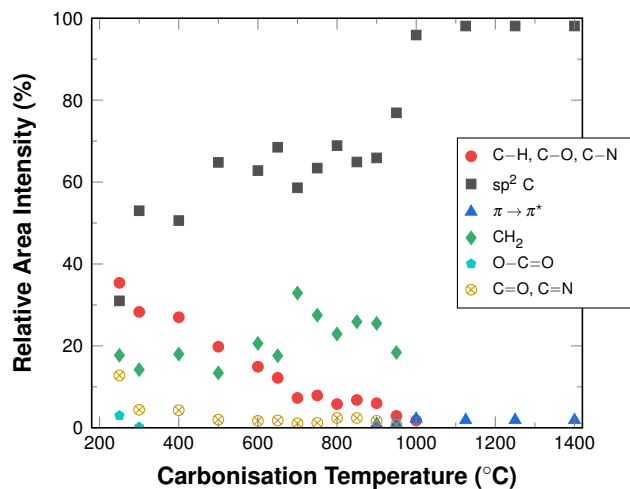


Figure S4 Relative area intensities of XPS peaks attributed to different types of carbon.

Figure S5 shows selected spectra that are the basis of Figures 10 and S4.

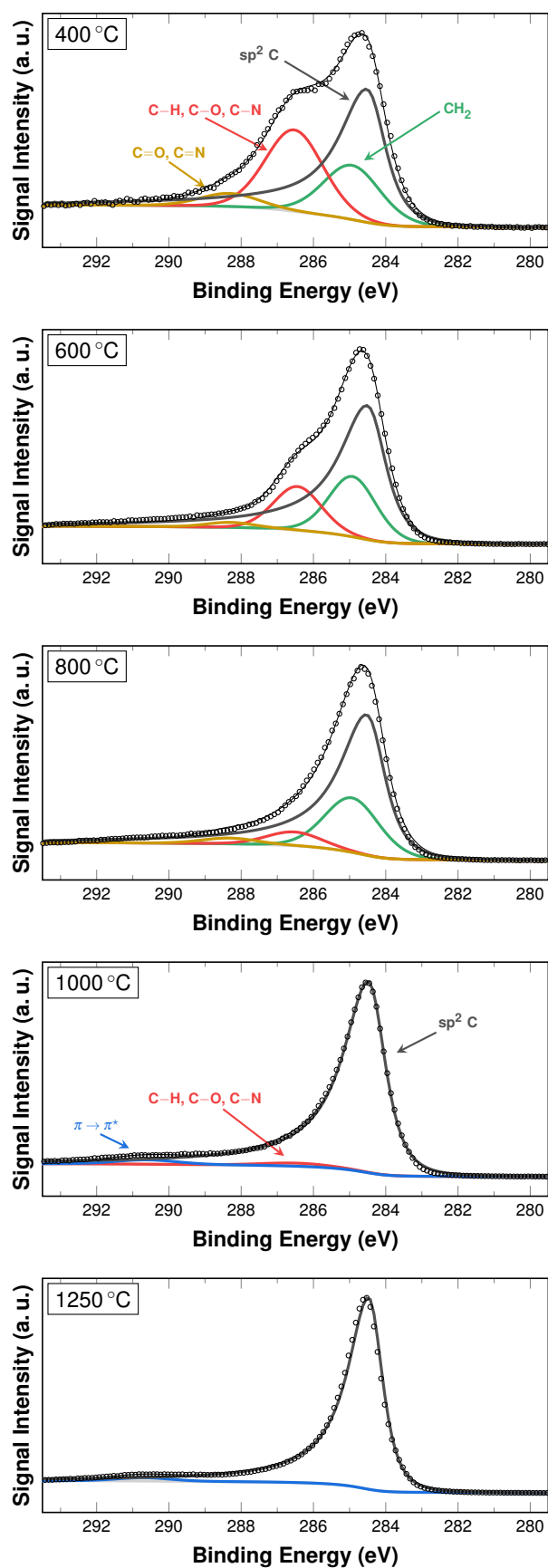


Figure S5 C1s range of XPS spectra for samples carbonised at 400 °C, 600 °C, 800 °C, 1000 °C, and 1250 °C.