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Supplementary Information

A boron nitride – carbon composite derived from ammonia borane and ZIF-8 with promises for the adsorption of carbon dioxide

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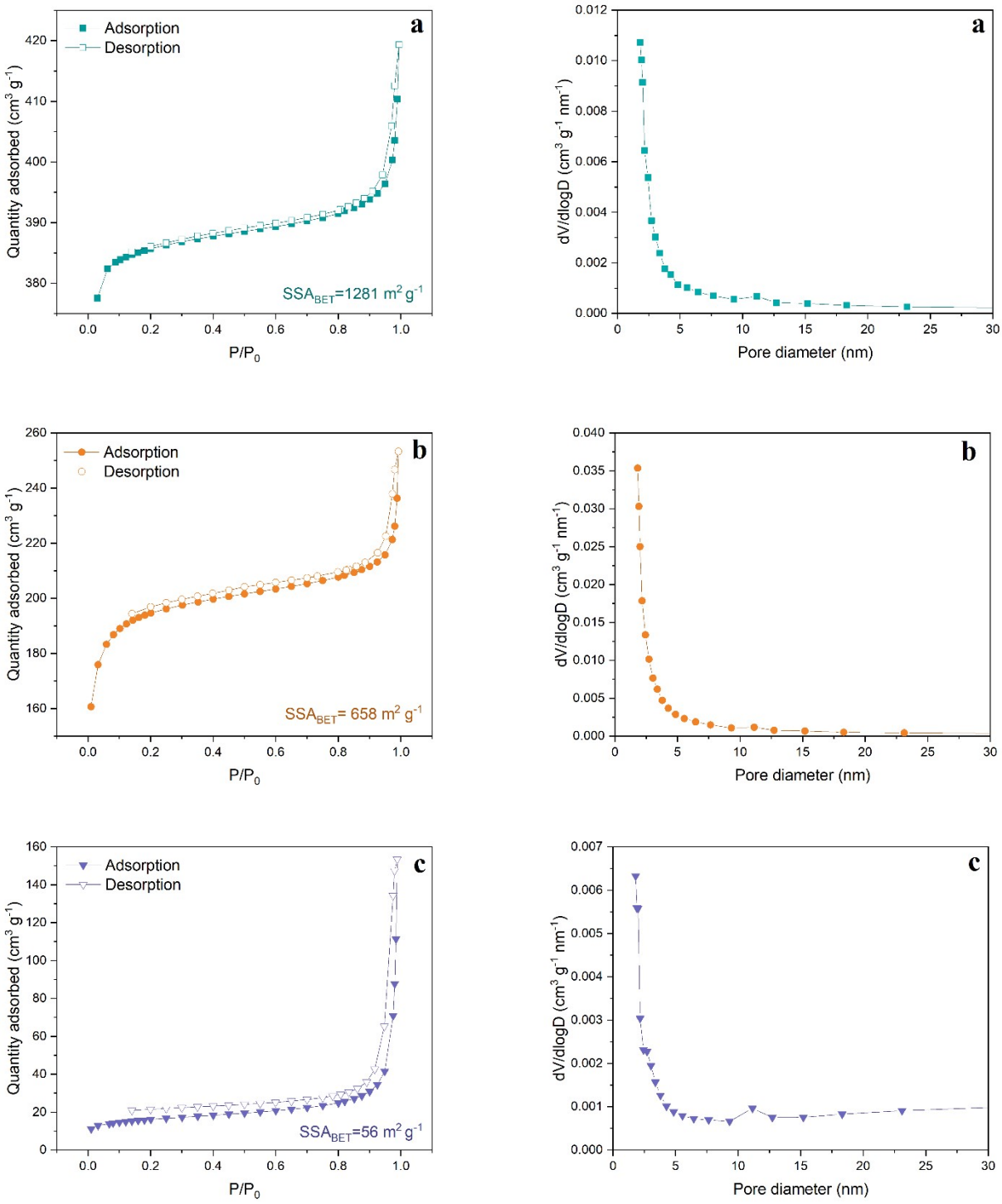

Figure S1. N_2 sorption isotherms (left) and average pore size distribution (right) of: **a** pristine ZIF-8, **b** ZIF800 and **c** BN@ZIF. The specific surface area SSA of each material is given.

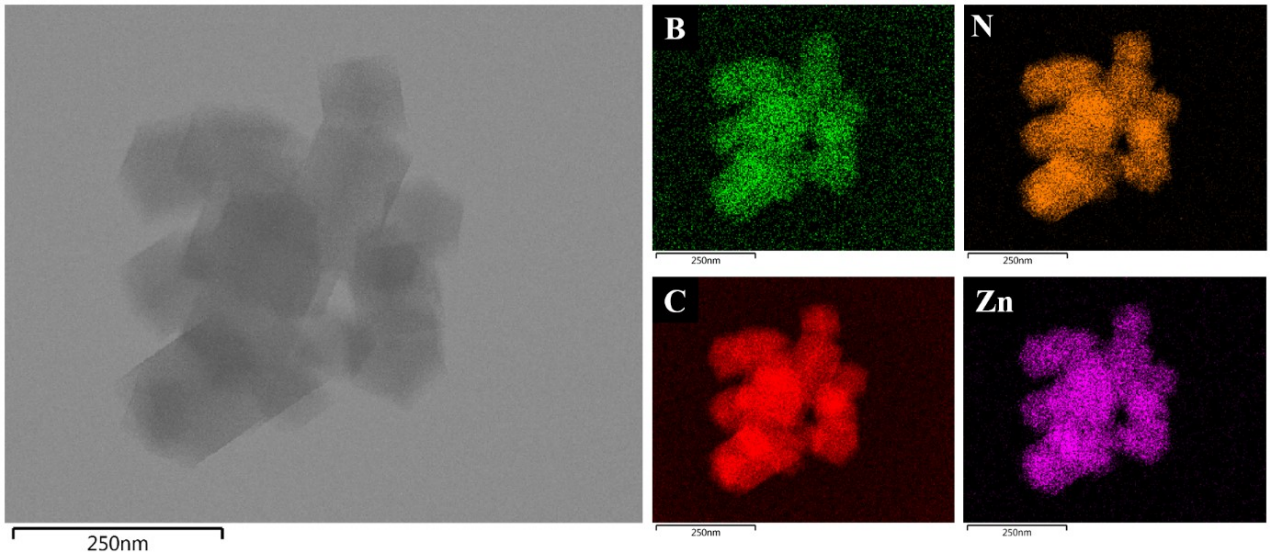

Figure S2. STEM-EDX analysis of the BN@ZIF composite. A homogeneous distribution of the B and N atoms is observed.

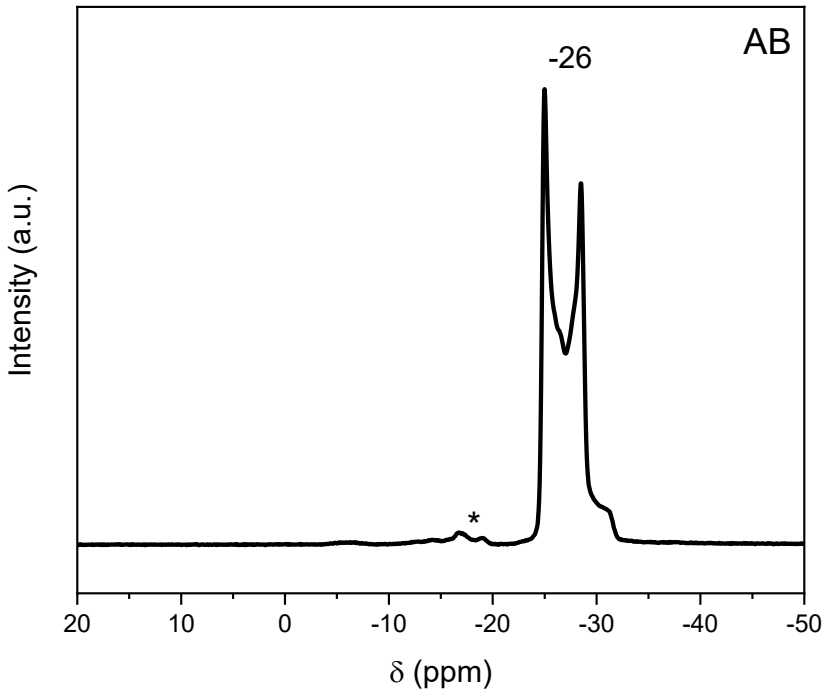

Figure S3. ^{11}B MAS NMR spectrum of AB. The chemical shift in ppm is indicated. The signals pointed by the star (*) indicate a slight decomposition of AB due to a possible increase of

temperature caused by the rotor rotation during the analysis. This is an issue that we have seen systematically.

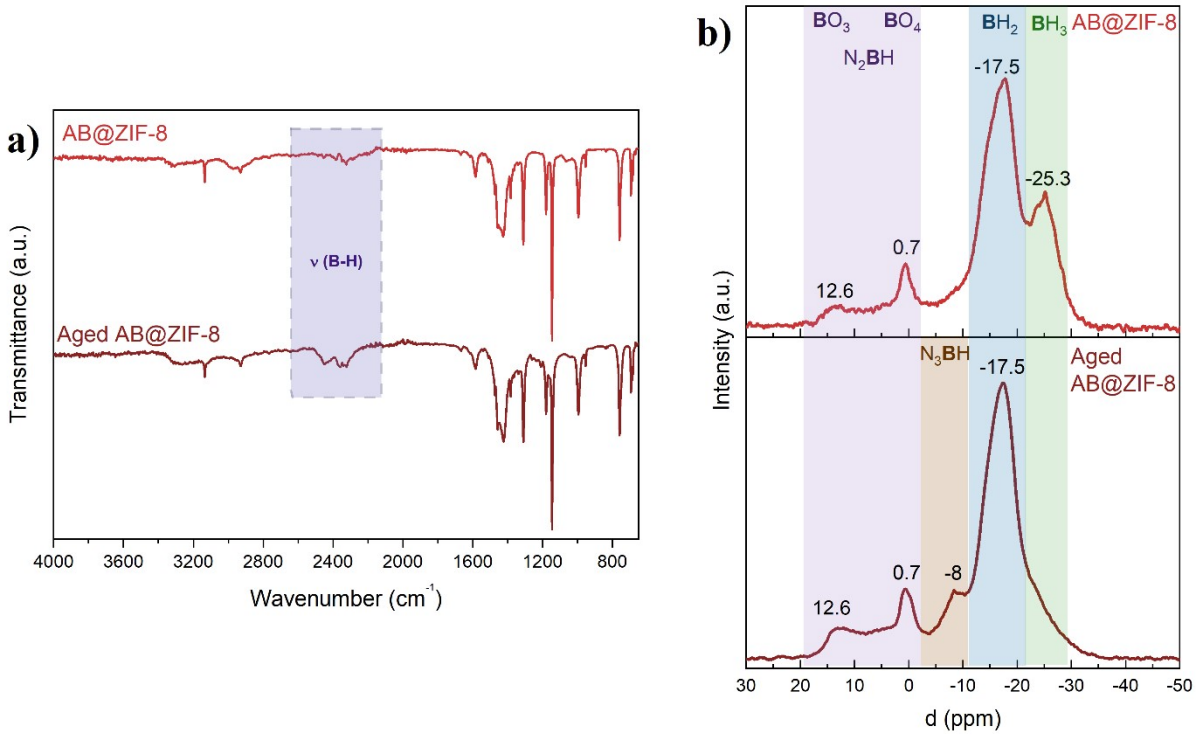

Figure S4. a) FTIR and b) ^{11}B MAS NMR spectra of the AB@ZIF-8 composite and an aged sample for 7 months. The vibrational modes and chemical environments of interest are indicated by the colored rectangles. The chemical shifts are indicated.

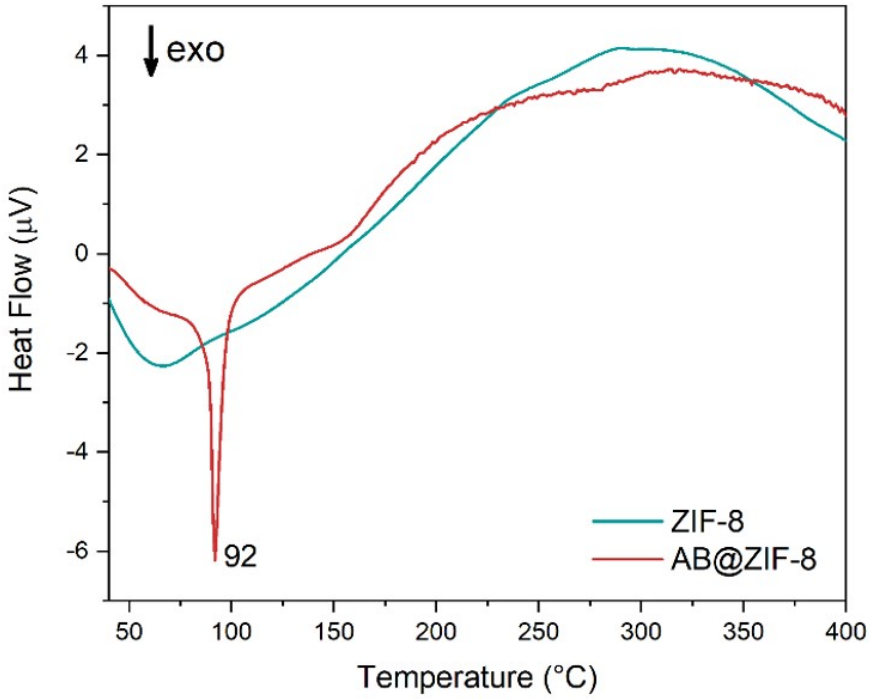

Figure S5. DSC analysis of pristine ZIF-8 and AB@ZIF-8.

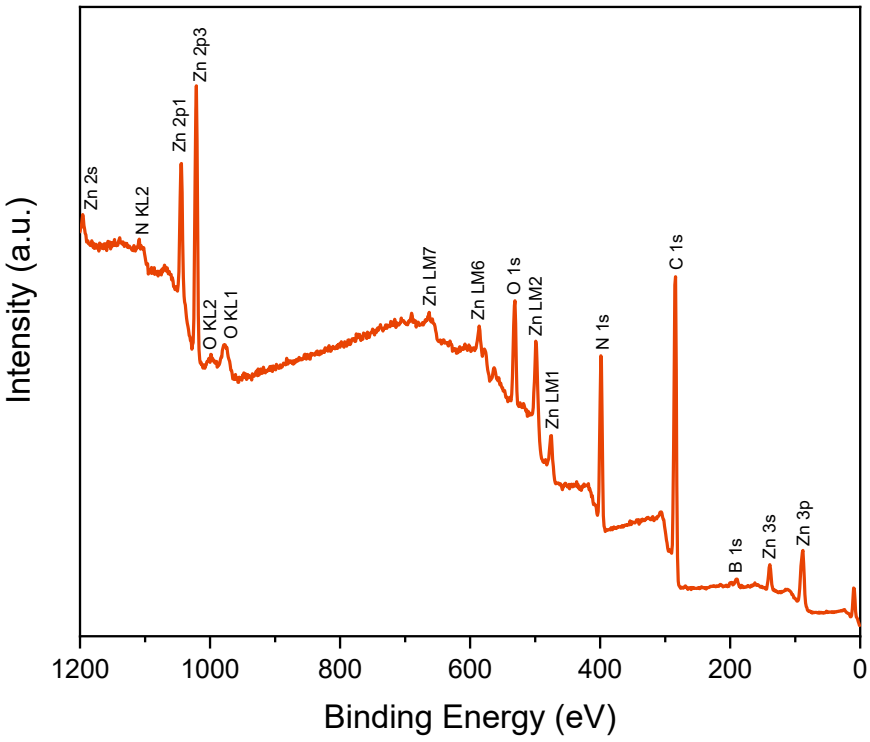

Figure S6. XPS survey spectrum of the AB@ZIF-8 composite.

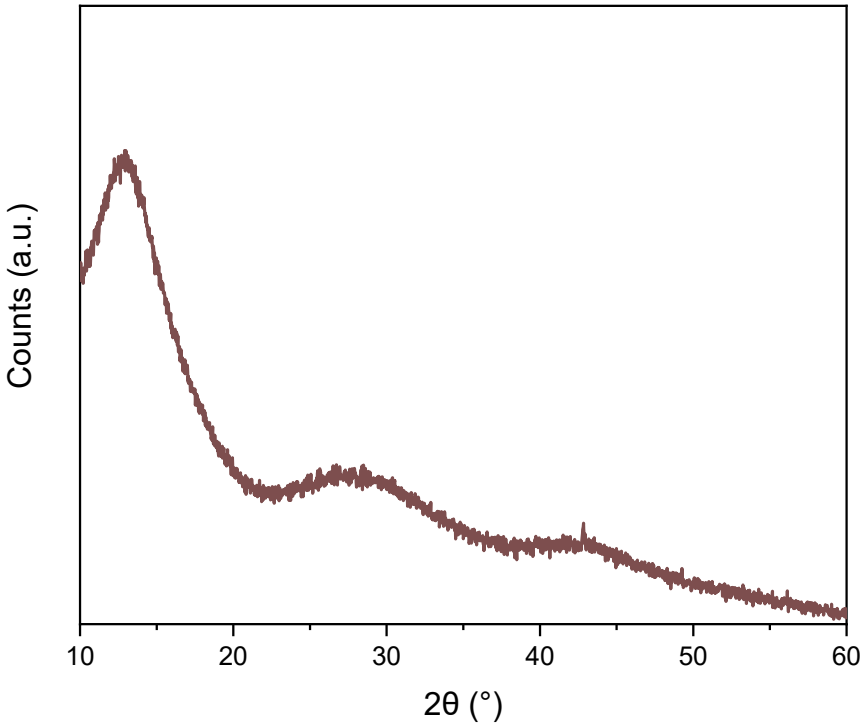

Figure S7. PXRD pattern of the BN@ZIF composite. A small diffraction peak is observed at 42° and it can be attributed to the formation of h-BN.

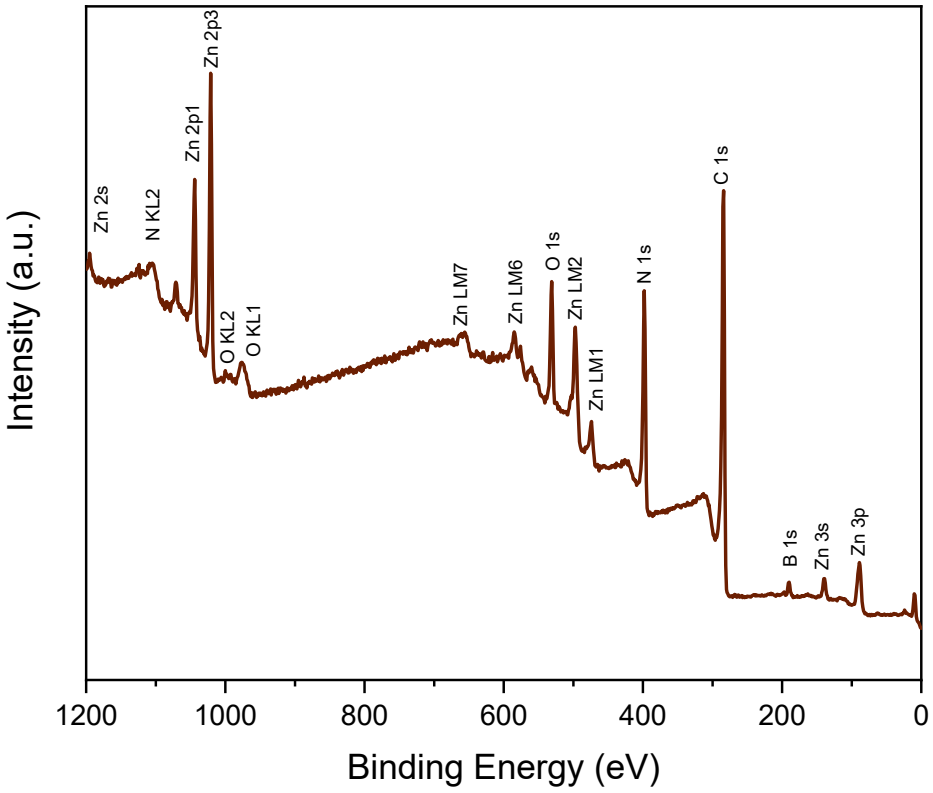

Figure S8. XPS survey spectrum of the BN@C composite.

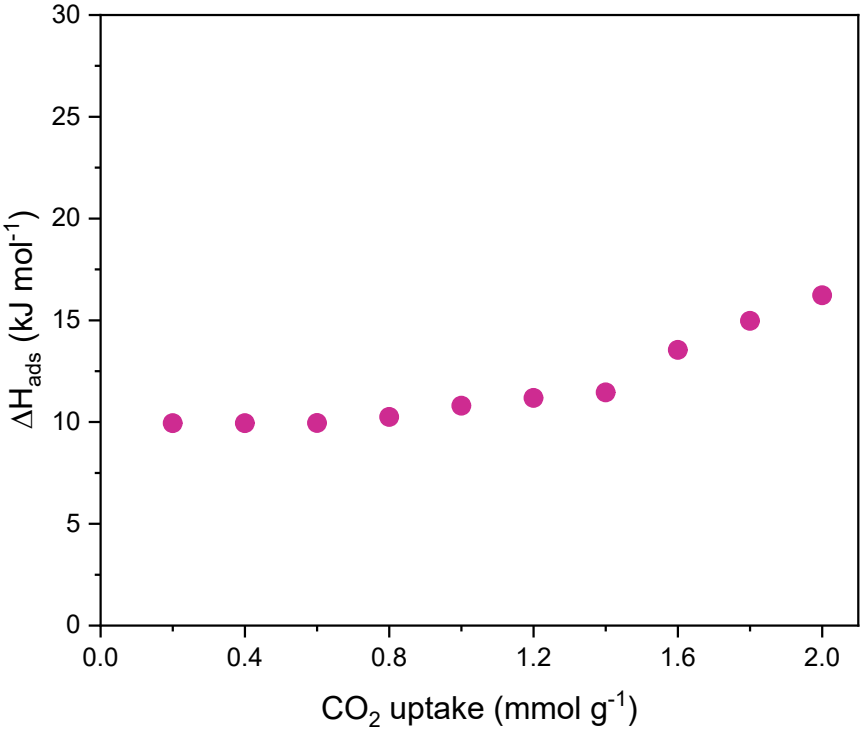

Figure S9. Isosteric enthalpy of adsorption of BN@C as a function of the CO_2 adsorbed.

Table S1. CO_2 uptake capacity of BN@C at different conditions

Temperature (°C)	Pressure (bar)	CO2 uptake (mmol g^{-1})
10	1.5	2.26
	2.5	2.9
30	1.5	1.94
	2.5	2.36
45	1.5	1.48
	2.5	2.11