

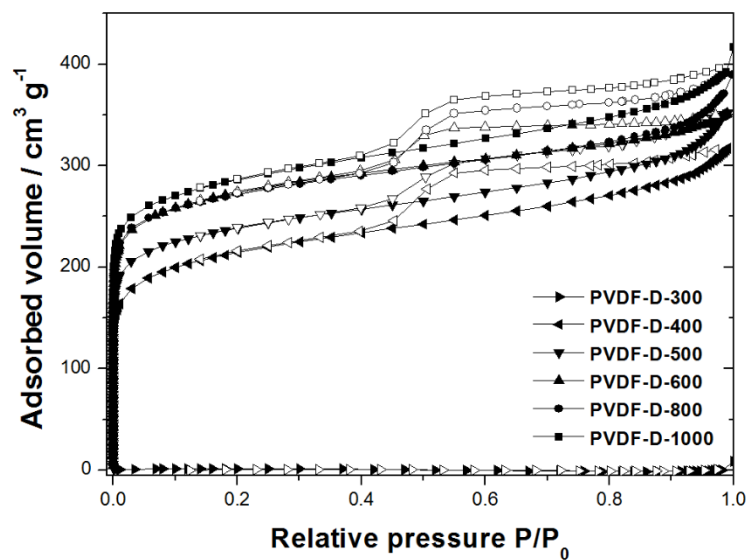
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**Electronic Supplementary Information (ESI)** for RSC Adv.

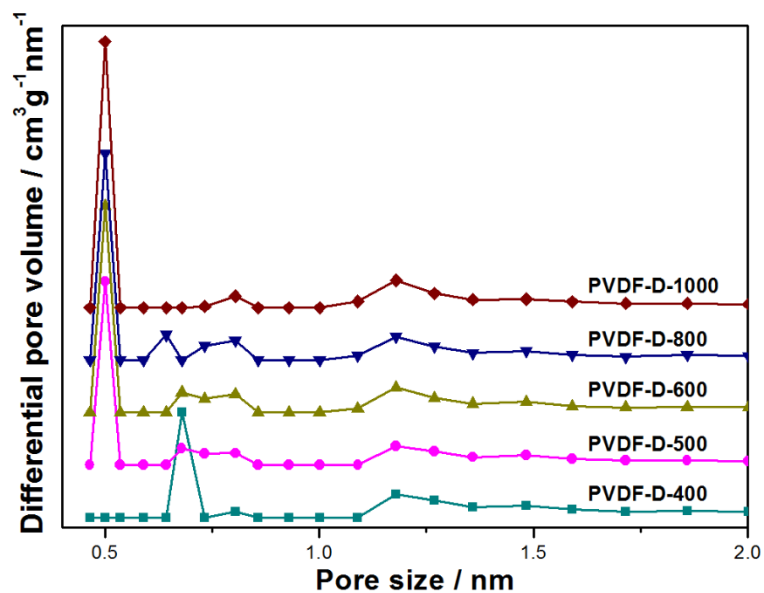
**Development of porous carbon nanofibers from electrospun polyvinylidene fluoride**

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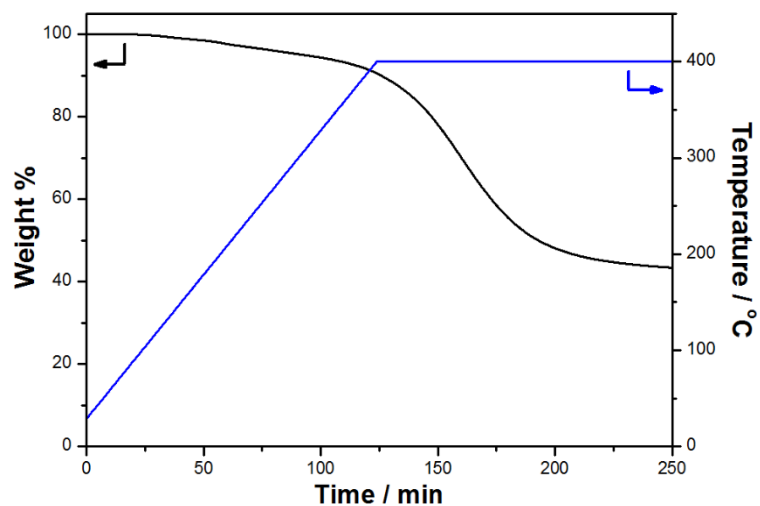
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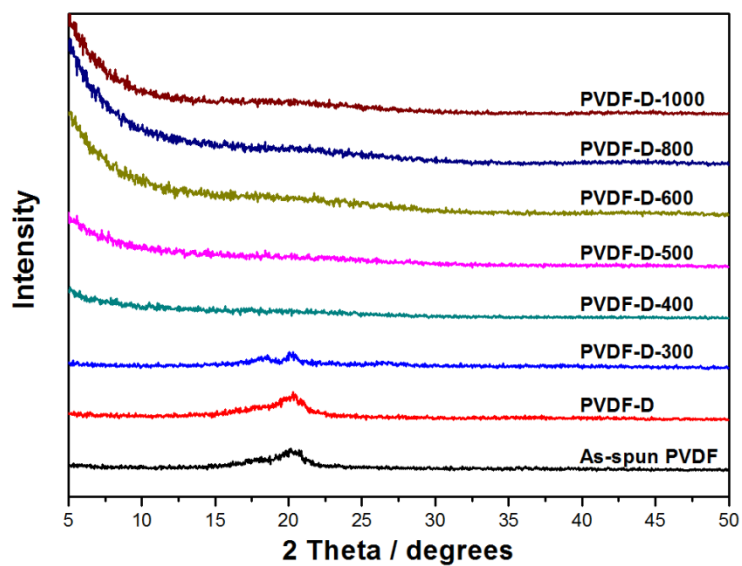
**Fig. S1.** N<sub>2</sub> adsorption (solid symbols) and desorption (open symbols) at 77 K on PVDF-based CNFs.



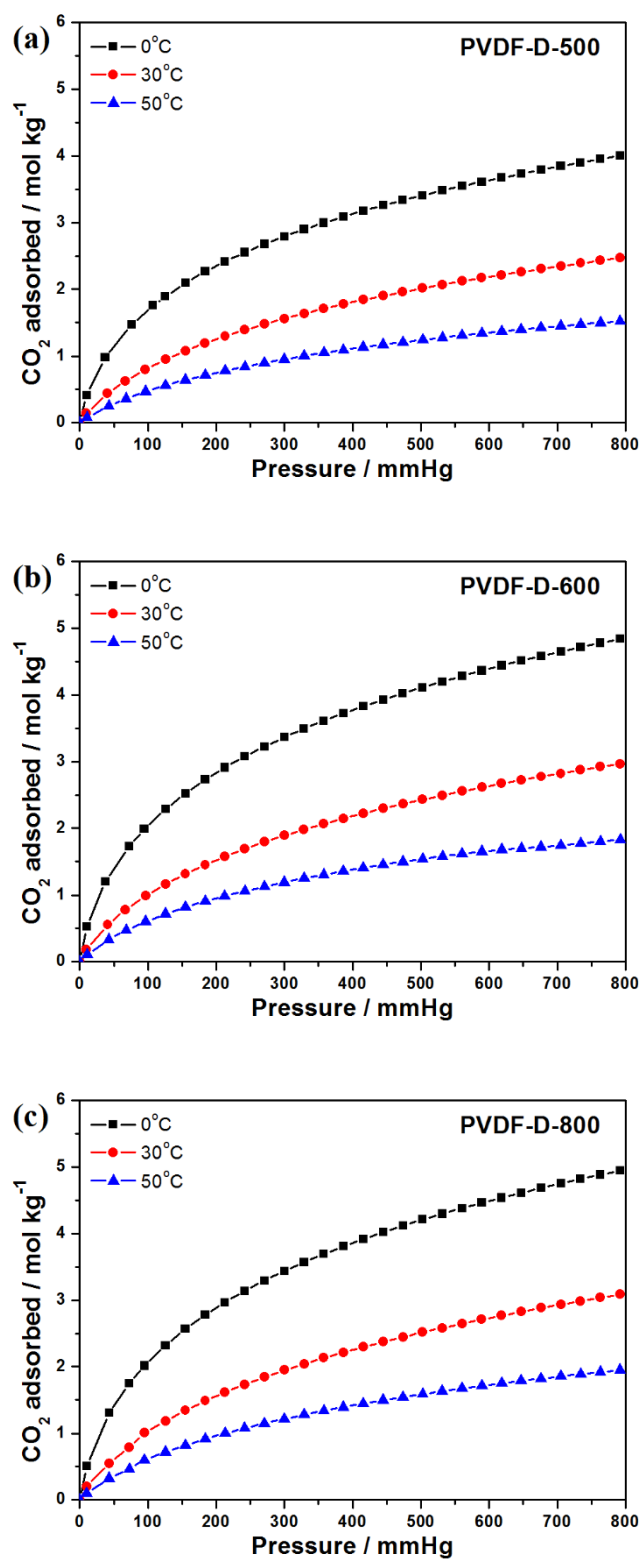
**Fig. S2.** DFT pore size distribution of PVDF-based CNFs.



**Fig. S3.** Weight change of PVDF-D during the two-step thermal treatment; the temperature is increased at a heating rate of  $3\text{ }^{\circ}\text{C min}^{-1}$  to  $400\text{ }^{\circ}\text{C}$ , and the system is maintained under isothermal conditions at  $400\text{ }^{\circ}\text{C}$  for 2 h.



**Fig. S4.** X-ray diffraction patterns of as-spun PVDF, PVDF-D, and PVDF-based CNFs.



**Fig. S5.** CO<sub>2</sub> adsorption isotherms at 0, 30, and 50 °C for (a) PVDF-D-500, (b) PVDF-D-600, and (c) PVDF-D-800.

**Table S1.** Comparison of CO<sub>2</sub> adsorption capacity for different carbonaceous adsorbents, measured at the pressure of ~1 bar.

Sample	S <sub>BET</sub> (m <sup>2</sup> g <sup>-1</sup> )	Temperature (°C)	CO <sub>2</sub> adsorption capacity (mol kg <sup>-1</sup> )	Reference
HCM-DAH-1-900-1 <sup>a)</sup>	1392	25	3.3	35
A-NMC <sup>b)</sup>	1417	25	3.2	36
aC <sup>c)</sup>	1857	25	2.9	37
PTP-OMC-I <sup>c)</sup>	453	25	2.7	38
GKOSA50 <sup>d)</sup>	1079	25	2.4	39
MFB-600 <sup>e)</sup>	490	25	2.3	40
<b>PVDF-D-1000</b>	<b>1065</b>	<b>30</b>	<b>3.1</b>	<b>This work</b>

<sup>a)</sup> CO<sub>2</sub> activated carbon monolith, <sup>b)</sup> KOH activated mesoporous carbon, <sup>c)</sup> ordered mesoporous carbon, <sup>d)</sup> activated carbon, and <sup>e)</sup> silica-templated porous carbon.