



Crystallinity of CVD-treated activated fibers at different temperatures

Wang Shuwen, 河又 悠真
信州大学工学部先鋭材料研究所

キーワード : crystallinity, synchrotron X-ray diffraction, carbon.

1. 背景と研究目的

Small angle X-ray scattering (SAXS) analysis can provide important structural information to non-crystal material, especially the structures of a few nanometers scale. Such structural information is an important supplement to the XRD analysis (202206172 and 202206174).

2. 実験内容

We conducted the temperature-dependent SAXS analysis for activated carbon fibers (ACF-1, ACF-2) and CVD-treated activated fibers (ACF-3, ACF-4). The measurement was conducted at 298, 473, 673 and 803 K.

3. 結果および考察

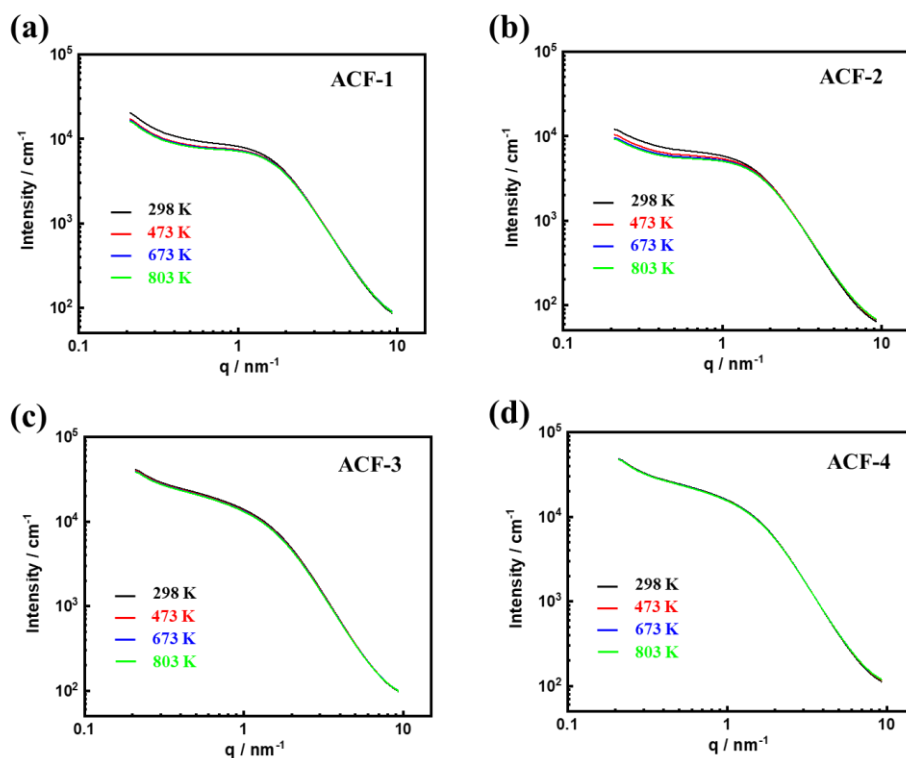


Fig. 1 SAXS of activated carbon fiber (a, b) and CVD-treated activated carbon fiber (c, d).

Figure 1a, b shows the SAXS of two activated carbon fibers (ACF-1, ACF-2). The SAXS intensity within $0.2 \text{ nm}^{-1} < q < 2 \text{ nm}^{-1}$ decrease with the increase of temperature, suggesting the structure of activated carbon fibers at a few nanometers scale changes remarkably with temperature. On the other hand, the SAXS intensity of CVD-treated activated carbon fibers (ACF-3, ACF-4) shown in Figure 1c,d is much less affected by the elevation of temperature, i.e., the CVD treatment can increase the stability of activated carbon fibers.