



# Sulfur-encapsulation in carbon with different pore size

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## 1. 背景と研究目的

EXAFS contains the structural information of coordination number and bond length. We encapsulated sulfur into porous carbon with different pore width. It is of significant importance to understand the relationship between the structural information of sulfur confined in different nanospaces.

## 2. 実験内容

Sulfur was encapsulated in a series of carbon-box (carbon molecular sieve, activated carbon fiber, porous graphene) of different pore width. The EXAFS spectra of sulfur-contained carbons-box was obtained in Aichi SR. The k space of EXAFS data can be obtained by nomalization of The XAFS spectra. Fourier transformation of k space gives R space of EXAFS data, and reverse Fourier transformation of R space gives q space.

## 3. 結果および考察

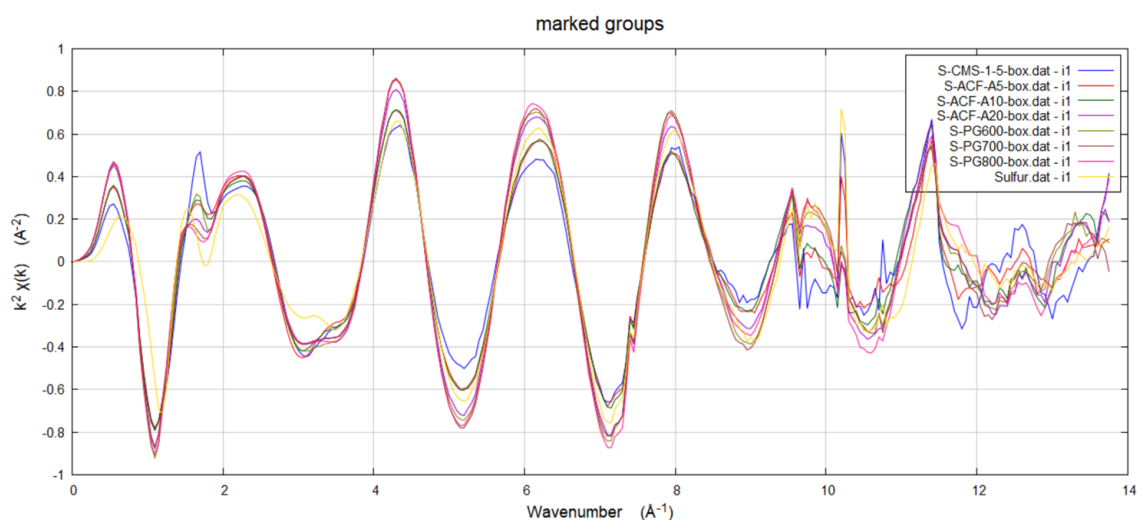


Fig 1. The EXAFS data (k space) of sulfur encapslated in carbon-box with different pore width.

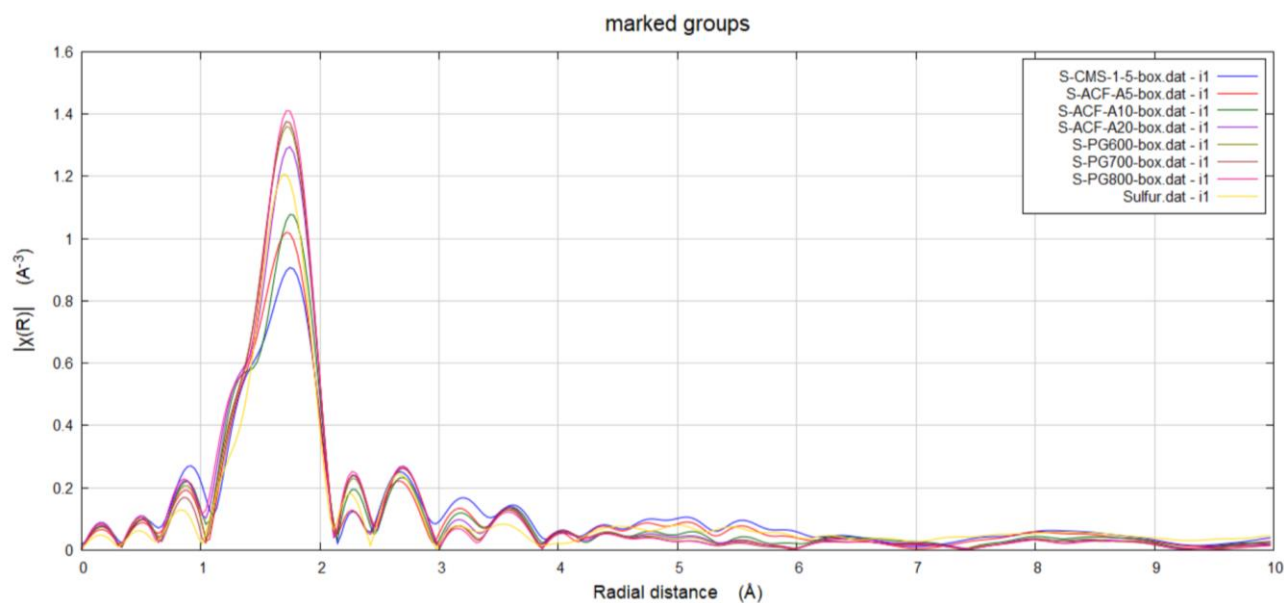


Fig 2. The EXAFS data (R space) of sulfur encapslated in carbon-box with different pore width.

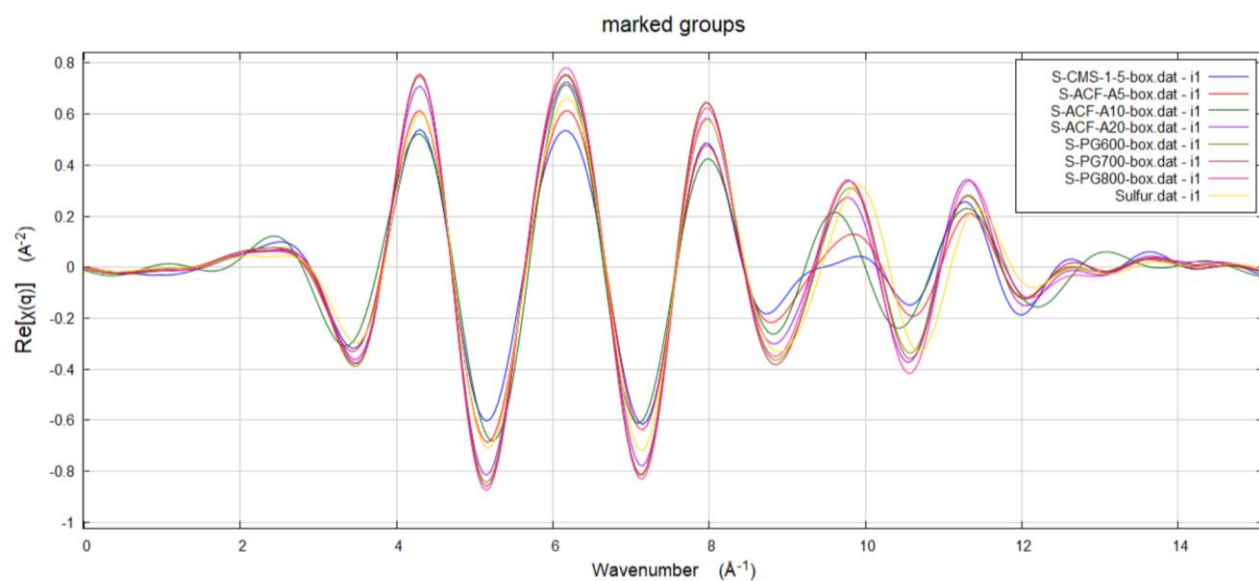


Fig 3. The EXAFS data (q space) of sulfur encapslated in carbon-box with different pore width.

The EXAFS data (k space) of sulfur encapslated in different carbon-box are shown in Figure 1. After Fourier transformation of k space we can obtain the radial distribution function of sulfur atoms (R space), as shown in Figure 2. The rever Fourier transformation of R space gives q space (Figure 3), from which the coordination number and bond length can be obtained by using software Artemis. Result indicate that the coordination number of the confined sulfur increases with the increase of pore width of carbon.