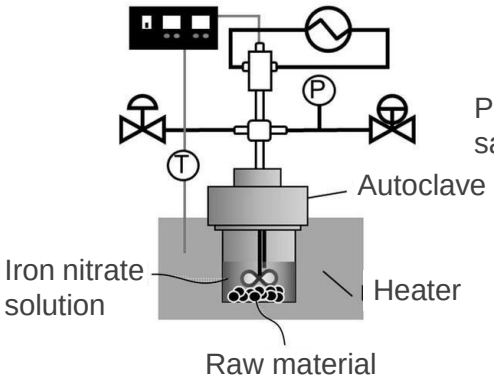
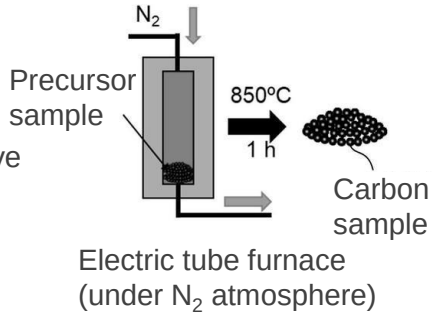
Tohoku Univ. Technology

Highly crystalline carbon production method, its precursor and its production method

Possible to produce highly crystalline carbon from sustainable resource raw material



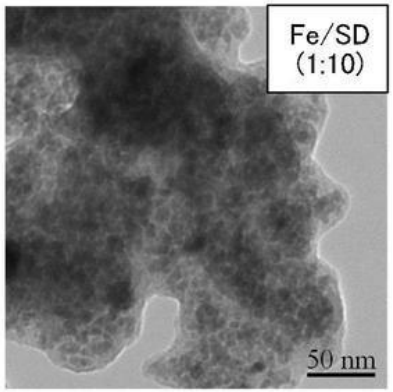


Overview

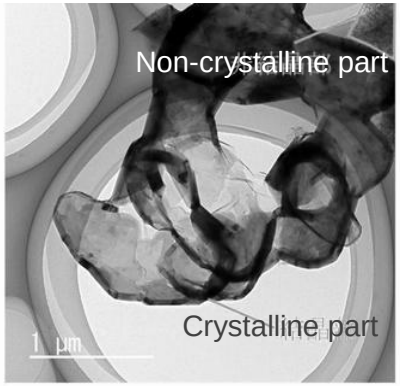
So far, crystalline carbon material with relatively large crystallite size and relatively small average interplanar spacing has been used as anode material for lithium-ion secondary battery and catalyst material for cathode in fuel cell. This highly crystalline carbon material is made from raw materials such as hyper-eutectoid molten pig iron, natural graphite and kish graphite. However, these raw materials are depletable resources and could be depleted in the future.

This invention is able to provide a highly crystalline carbon production method, its precursor production method and the precursor itself, using sustainable resources as raw material. This invention has a precursor production process in which at least one of iron, nickel or cobalt is impregnated into the raw material containing biomass which is a sustainable resource, followed by heat treatment to obtain a precursor, and a carbonization process in which the precursor is carbonized by heating and then washed by acid. This invention allows the production of highly crystalline carbon and its precursor.

Highly crystalline carbon can be obtained by adjusting the weight ratio of iron and biomass



Precursor



Highly crystalline carbon

Product Application

- Anode material for lithium-ion or aluminum-ion secondary battery

Related Works

[1] Y. Nakayasu et al., Carbon Trends, 8, 100190, 2022.

IP Data

IP No.	:	JP2022-126560
Inventor	:	NAKAYASU Yuta, GOTO Yasuto, WATANABE Masaru, ITO Takashi
Admin No.	:	T20-1564

Contact

Tohoku Techno Arch Co., Ltd.
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