

Manufacturing method of aluminum borate whiskers

Easily produce materials that are useful as reinforcing agents for metals, etc.

Overview

Aluminum borate whiskers have excellent mechanical strength and heat resistance, and are mainly used as reinforcing materials for metal materials. For example, a flux method using a melting agent is used as a manufacturing method. However, at the end of the manufacturing process, it is necessary to separate the melting agent from the whisker, which requires time and effort.

The present invention solves the problems of the conventional method by constructing a reaction process using a liquid solvent, and demonstrates the simple and large-scale production of aluminum borate whiskers. More specifically, the process involves dissolving metallic aluminum in alcohol by adding halide ions and adjusting the pH, mixing the boron compound with water, and calcining the precipitated precipitate by adjusting the pH. The aluminum borate whiskers produced in this way have a high affinity for light metals such as aluminum and magnesium, and are expected to be used in automobile engine parts and semiconductor manufacturing equipment.

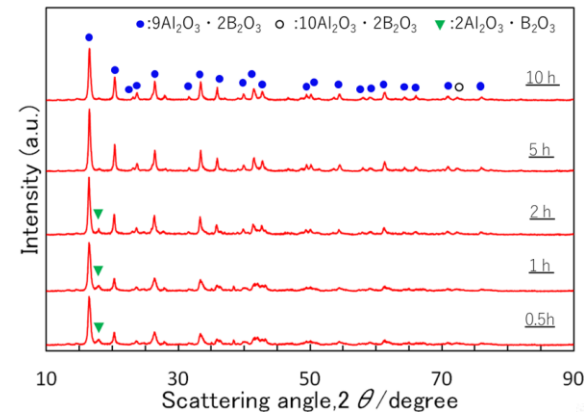
Product Application

- ❑ Fiber reinforced metal
For use on light metals and ceramics
→ Automobile, machinery, aviation parts, etc.
- ❑ Fiber reinforced plastic
For use with polyester resins and aromatic polyamide resins
→ Precision molded parts, wear-resistant parts, etc.

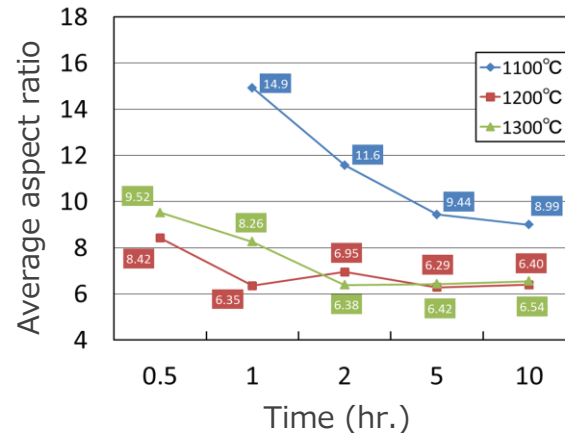
IP Data

IP No. : JP6509668
Inventor : Yasuhiro Osafune, Osami Seri
Admin No. : MU24-001

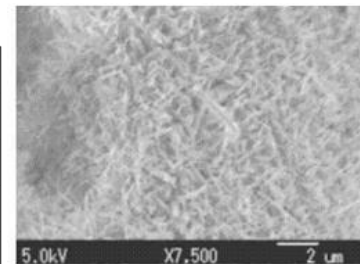
Features・Outstandings



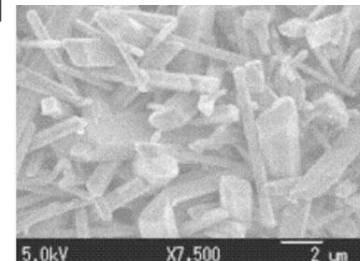
The peaks (marked with ●) of aluminum borate whiskers $9\text{Al}_2\text{O}_3 \cdot 2\text{B}_2\text{O}_3$ were detected.



The aspect ratio of aluminum borate whisker particles can be adjusted by changing the heat treatment conditions.



Heat treatment at 1100°C for 2 hours.



Heat treatment at 1300°C for 2 hours.

Related Works

Contact

Tohoku Techno Arch Co., Ltd.

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