Tohoku Univ. Technology

Slurry and spherical particle production method

Production of small size and dense spherical particle by cancelling slurry precipitation

Possible to apply to MoSiBTiC alloy particle

Overview

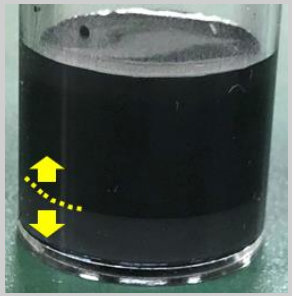
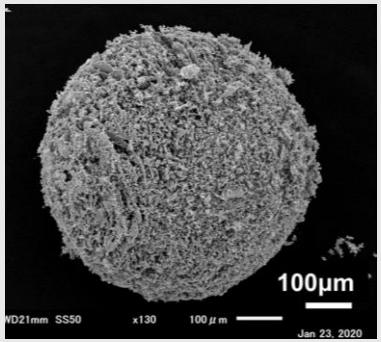
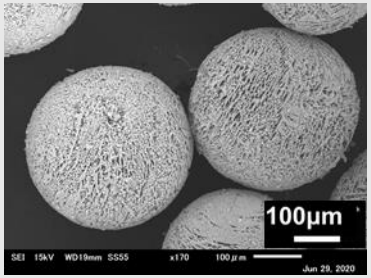
Particles with a uniform size of few 10 to 100 μm are expected to be used as raw material for additive manufacturing (3D printer). The Pulsated Orifice Ejection Method (POEM) and the freeze-dry POEM (FD-POEM) developed by the inventor are used for their production. From the point of view of composition control and spheronization by surface tension, the raw material is preferable to be in slurry form. However, the precipitation in a short time and consequently high particle concentration cannot be achieved.

This invention makes possible to disperse particle for a relatively long time at a high concentration and to produce small & dense spherical particle than the conventional one using FD-POEM. Moreover, this invention can be applied to particle production of MoSiBTiC alloy, which is an ultra-high temperature material.

Product Application

- Raw material of additive manufacturing (3D printer)
- Other technologies having the problem of blockage due to slurry precipitation

Slurry precipitation, Spherical particle

	Conventional method	This invention
Slurry precipitation	 MoSiBTiC:10vol% Precipitation within 10 min.	 MoSiBTiC:20vol% No precipitation more than 30 min.
Spherical particle	 d_{50}≒600μm, void fraction13%	 d_{50}≒300μm, void fraction 5% Small size and fense

Related Works

IP Data

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