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Dry Wear Properties of Lotus-type Porous Metal Fabricated by Unidirectional Solidification of the Application of an Air Bearing

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We have been investigated application of the rotus type porous metal that is manufactured by the unidirectional solidification of the melt in pressurized gas atmosphere such as hydrogen or nitrogen for an air bearing development.

Presently, as the material of an air bearing, sintered porous material is used, and a high balancing technique is demanded to control a uniformed flowing of fluid and a non-linear behavior that is caused by high compression in a development of an air bearing. Their problem is can be overcome by the control of the size and porosity of the rotus type porous metal. In this study, wear properties of the rotus type porous metal caused by the friction between a porous metal and main spindle were investigated under the condition of variable shapes and low velocity (100~500rpm).

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Liquid Mechanism of Molten Metal Alloys for Metallic Foam

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The rheological characteristics are the most important factors in the metal foam manufacturing. One of the possible process-routes is to blow gas bubbles into liquid metals. However many metallic foams produced by foaming method have coarse and irregular cell structures. One of the industrial aims is to fabricate foams with more uniform structure and cell size. It is important to understand the mechanisms and the factor control. Therefore in this research, the rheological characteristics, namely surface tension (by the ring method) and viscosity (by the rotation method) of Al alloys were investigated under pure Ar atmosphere in function of temperatures and alloying element concentration. Of course in the actual foaming process the appearance of the rheological characteristics are very much influenced from the existing of particles. However the fundamental rheological data do not lose the importance.