
Special Interest Seminars | SIS7 Powder Design for Industrial Application

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Special Interest Seminars

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Wed. Oct 16, 2024 10:30 AM - 11:55 AM Room C (3F 303, Conference Center)

10:30 AM - 10:55 AM

[16C-SIS7-01] Special Invited: Development of Aluminum Bronze Powder for Powder Metallurgy

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Keywords: aluminum bronze powder, fluoride, phosphorus alloy, sinterability

Aluminum bronze is a copper alloy with high strength, heat resistance, corrosion resistance, and wear resistance, and is widely used in ships and mechanical parts. However, it has been difficult to manufacture aluminum bronze using powder metallurgy because alumina layer is formed on the powder surface and prevents sintering. In this development, we removed the alumina layer through AIOF gas formation by adding AlF_3 as a sintering aid to the Cu-Al alloy, which was the raw material powder, and succeeded in promoting diffusion among powder particles. Furthermore, we improved the sinterability by adding CaF_2 , which forms a liquid phase with AlF_3 , and by adding Cu-P, which generates a liquid phase during the sintering process. As a result, it has become possible to sinter the aluminum bronze in a low H_2 concentration atmosphere including N_2 , and the mass productivity of it has been improved.