

||||| 特集：燃焼～単純化して探る複雑現象 |||||
(原著論文)

微小重力環境下における被覆導線の通電着火特性

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Wire Insulation Ignition with Excess Electric Current in Microgravity

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Abstract

Ignition phenomenon of polyethylene insulated wire with excess electric current was observed in normal and micro gravity. Microgravity experiments were conducted by HASTIC 50 m drop tower in Hokkaido and MGLAB (Micro Gravity Laboratory of Japan) in Gifu. The experimental parameters were electric current value, surrounding oxygen concentration and pressure. The results showed that the limit of electric current to cause ignition dramatically extended to lower current value in microgravity in comparison with normal gravity. Further, it was shown that the longer microgravity time led to lower current limit of wire ignition. Oxygen concentration and pressure had important effect on ignition delay time; namely, the higher oxygen and higher pressure resulted in shorter ignition delay time under the condition applied in the present study.