



Contribution ID: 1423

Type: **Poster Presentation**

Mon-Af-Po1.14-01 [27]: A Study on the Dielectric Characteristics of Epoxy Resin according to Surface Roughness

Monday 23 September 2019 14:30 (2 hours)

A joint method for enlarging the length of a superconducting coil should be developed in order to cope with the power demand of industrial society. There are many kinds of joint methods are proposed to enlarge the length of a superconducting coil with high electrical reliability. Among them, a stop joint box method is known as the most promising method to enlarge the length of a superconducting coil because the pressure of a superconducting coil system keep constant with a stop joint box method. However, electrical breakdown could occur because of the vulnerable dielectric characteristics at surface between epoxy resin and polypropylene laminated paper (PPLP) in the stop joint box method. It is well known that the dielectric characteristics of surface between two solid insulation materials are inferior to those of a liquid or a solid insulation material. Therefore, creepage discharge characteristics of surface between epoxy resin and PPLP should be performed according to surface roughness. In this study, experiments on dielectric characteristics of a stop joint box method are performed according to pressure and roughness. It is found that the dielectric characteristics of a stop joint box method are dependent on the roughness of solid materials.

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Session Classification: Mon-Af-Po1.14 - Electrical Insulation for Magnets