

Abstract Submitted
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Surface flashover of machinable ceramic insulators LAURA BIEDERMANN, RICKY TANG, JOSEPH HOWARD, Sandia National Laboratories — Machinable ceramics are frequently used to provide high-voltage insulation in vacuum and low-pressure applications. Surface flashover for these insulators occurs as a multi-stage process: cathodic triple-point emission initiates secondary electron emission (SEE) from the ceramic surface. If a positive feedback loop develops, flashover occurs as Townsend breakdown of desorbed gas species. To increase the voltage hold-off strength, ceramics may be coated with a semi-conductive coating to decrease the SEE yield. Hold-off strengths of cylindrical ceramic samples are measured in a nearly-uniform electric field as a function of background gas pressure and composition. Following conditioning, these coated ceramics exhibit stable, reproducible hold-off strengths with individual flashovers occurring at random locations, suggesting, at most, limited damage to the ceramics by these flashover events. Sandia National Laboratories is a multimission laboratory managed and operated by National Technology and Engineering Solutions of Sandia LLC, a wholly owned subsidiary of Honeywell International Inc., for the U.S. Department of Energy National Nuclear Security Administration under contract DE-NA0003525

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