



Contribution ID: 339

Type: **Poster Presentation**

Dielectric Strength Testing of 3D Printed Polymeric Materials

Wednesday 6 July 2016 14:40 (20 minutes)

Additive manufacturing techniques offer the potential to fabricate dielectric insulators with highly complex geometry; however, the relative lack of bulk dielectric strength data for many of these materials potentially limits the usefulness of these techniques for fabricating structures intended for use in high field environments. Furthermore, data suggests that the choice of printing technique may impart additional limitations in insulators by introducing anisotropic dielectric properties within the emphasized text part which are related to the original orientation in which the part was printed. The authors will present dielectric strength testing data, based on the ASTM D149 standard, for parts fabricated using the stereolithography (SLA), fused deposition modeling (FDM), and selective laser sintering (SLS) additive manufacturing techniques.

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Session Classification: Poster 1-A

Track Classification: Dielectrics, Insulation, and Breakdown