Using Multiphysics for Detecting Atmospheric Ice Through MuVi Graphene - Atmospheric Icing Sensor

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Abstract

A new atmospheric icing sensor have been developed by Atmospheric Icing Research Team at Narvik University College which is aimed to deliver ice type using the dielectric variations in the heterogeneous mixture of water, air and pure ice (atmospheric ice). In this study, Debye Model was used to model the permittivity variations and Mughal-Conductivity Relation is used to model the conductivity variations due to frequency and temperature.

This paper focuses upon validating the electromagnetic analytical physics of dielectric variation of atmospheric ice with the experimental results using numerical simulations of atmospheric ice deposited uniformly around the rotary atmospheric icing sensor MuVi-Graphene.