Abstracts

Microwave Breakdown Near a Hot Surface (Jan. 1964 [T-MTT])

M. Gilden and J. Pergola. "Microwave Breakdown Near a Hot Surface (Jan. 1964 [T-MTT])." 1964 Transactions on Microwave Theory and Techniques 12.1 (Jan. 1964 [T-MTT]): 26-33.

Microwave breakdown near a hot surface in a waveguide system was studied to determine its dependence upon the thickness of the adjacent film of hot gas and its associated temperatures. The effect of the variation of the film thickness with the flow rate of the bulk of the gas was of particular interest. To carry out the theoretical analysis, a more general breakdown equation was derived to account for the temperature gradients. Experimental results supporting the theory also are presented. The study shows that, although the breakdown threshold of a waveguide system is lowered by the presence of a hot surface, a sufficiently rapid flow of the bulk gas tends to restore the threshold as a result of the reduction in the thickness of the film of hot gas. This effect occurs in addition to that reduction resulting from cooling the surface.

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