

Heat and Mass Transfer Study of Supercooled Large Droplet Icing

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Abstract : The heat and mass transfer characteristics of icing coupled with film flow is studied and the coupled model of the thermal behavior with the flow simulation by single-step method is developed. The behavior of ice and water was analyzed. The results show that under supercooled large droplet (SLD) icing conditions, the film flow is an important phenomena in icing accretion process. The pressure gradient, gravity and shear stress are the main factors affecting the film flow on icing surface, which has important influence on the shape and rate of icing. To predict SLD ice accretion accurately, the heat and mass transfer of ice and film flow should be taken into account.

Keywords : SLD, aircraft, icing, heat and mass transfer

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