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# THE EXPERIMENTAL STUDY OF SURFACE CATALYTIC EFFECT ON THE STAGNATION HEAT-TRANSFER RATES IN HIGH-ENTHALPY SHOCK TUBE

**Abstract**

With the development of hypersonic vehicles, the surface catalytic effect plays a more and more significant role on the aerodynamic heat loads of the vehicles under high enthalpy dissociated environment. In this paper, an experimental campaign dedicated to the catalytic effect on aerodynamic heating was performed in high-enthalpy shock tube. The heat-transfer rates at the stagnation region of test models were measured using coaxial thermocouples. The surface of the test models were coated with Cu or Al2O3 film, and the Cu coated model showed a heat-transfer-rate value 28% higher than that to a Al2O3 coated model in air environment. The obtained results would be useful for the accurate prediction of the aerodynamic heat load for hypersonic vehicles.