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SHEAR WORK CONTRIBUTION TO CONVECTIVE HEAT TRANSFER OF DILUTE GASES IN SLIP FLOW REGIME

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HIGHLIGHTS

- A comprehensive theoretical analysis of the convective heat transfer in presence of a dilute gas with non-negligible viscous dissipation is presented.
- Modified boundary conditions coupled to the energy balance equation are not needed for dilute gases in order to take into account the effect of the shear work on the Nusselt number.
- The adoption of the modified boundary condition leads to an underestimation or an overestimation of the Nusselt numbers depending on the values of Brinkman number and on the channel cross section geometry.

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