Boundary layer flow and heat transfer adjacent to a stretching vertical sheet with prescribed surface heat flux

ABSTRACT

The steady two-dimensional flow adjacent to a vertical, continuously stretching sheet in a viscous and incompressible fluid is studied. It is assumed that the sheet is stretched with a power-law velocity and is subjected to a variable surface heat flux. The governing partial differential equations are reduced to nonlinear ordinary differential equations by a similarity transformation, before being solved numerically by the Keller-box method. Results showed that the heat transfer rate at the surface increases as the velocity exponent parameter, mixed convection parameter and the Prandtl number are increased.

Keyword: Similarity solution; Heat transfer; Numerical solution; Stretching sheet