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| Title | Blasius and Sakiadis slip flows of nanofluid with radiation effects. | | |
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| Abstract |  |
| The steady two-dimensional boundary layer slip flow of a viscous incompressible Cu-water nanofluid past a moving radiating plate in a quiescent fluid (Sakiadis flow) and the flow induced over a stationary radiating flat plate by a uniform free stream (Blasius flow) are investigated simultaneously numerically. The experimental correlations for the effective density, thermal conductivity, and viscosity of nanofluid are used in the governing equations. Similarity equations of the governing transport equations are derived using similarity variables developed by a scaling group of transformation. The transformed equations are solved numerically using an implicit finite-difference numerical method. The emerging parameters are Prandtl number, radiation conduction, velocity ratio, thermal slip, and hydrodynamic slip. Sample results for the dimensionless axial velocity profiles, temperature profiles, friction factor, and rate of heat transfer have been presented graphically and discussed in detail. The friction factor for the Sakiadis flow is higher than that for the Blasius flow, whereas heat transfer rates for the Sakiadis flow are lower than that for the Blasius flow. The present results of the skin friction factor and the heat transfer rate are also compared with the published results for several special cases and are found to be in good agreement. | |