

## Documents

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**Heat and mass transfer boundary-layer flow over a vertical cone through porous media filled with a Cu–water and Ag–water nanofluid**  
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### Abstract

In this paper, we have described the influence of thermal radiation and chemical reaction on boundary-layer flow, heat and mass transfer of two different nanofluids in a porous medium over a vertical cone with heat generation/absorption. In the present study, we have considered two varieties of nanofluids, namely, Cu–water and Ag–water nanofluids (with volume fraction 10% and 30%). The similarity variables are used to transform conservation equations for the nanofluid into a set of ordinary differential equations and are solved numerically subject to the boundary conditions using well-organized, extensively authorized, variational finite element method. The correctness of the present numerical code is validated with previously published data, and the results are found to be in good agreement. The sway of important nondimensional parameters of velocity, temperature, and nanoparticle concentration fields as well as the skin friction coefficient, Nusselt number, and Sherwood number are examined in detail, and the results are shown graphically and in a tabular form to illustrate the physical importance of the problem. The thermal boundary-layer thickness is raised in the entire flow region as the volume fraction of nanoparticles increased from 10% to 30%, and this rise in the temperature profiles is more in the Ag–water nanofluid than in the Cu–water nanofluid. © 2018 by Begell House, Inc.

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