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Numerical simulation of double-diffusive mixed convection and entropy generation in a lid-driven trapezoidal enclosure with a heat source
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Abstract
In this study, entropy generation of double-diffusive mixed convection is investigated inside a right-angled trapezoidal cavity with a partially heated and salted bottom wall. Similar to the approach that assigns color to streamlines, a new coloring scheme is employed to visualize heatlines and masslines in a more meaningful manner. In addition, various consequential parameters, namely the Lewis and Richardson numbers, the buoyancy ratio, the direction of lid movement, and the heat source location, have been analyzed. According to the results, as the Lewis number increases, the average Nusselt number declines, while the total entropy generation augments. Furthermore, for Le = 0.1, the conduction mass transfer dominates the mass transfer field; hence, the masslines are virtually perpendicular to the isoconcentration lines. © 2018, © 2018 Taylor & Francis.

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