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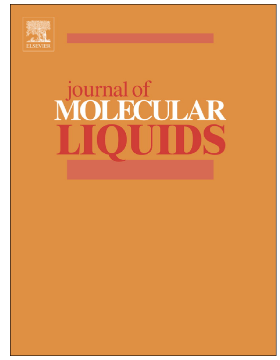

Entropy generation minimization and binary chemical reaction with Arrhenius activation energy in MHD radiative flow of nanomaterial

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Entropy generation minimization and binary chemical reaction with Arrhenius activation energy in MHD radiative flow of nanomaterial

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Abstract: Our aim here is to investigate the MHD radiative nanomaterial flow of Casson fluid towards a stretched surface. Heat transport mechanism is examined through thermal radiation and heat source/sink. Entropy generation is explored as a function of concentration, temperature and velocity. Total entropy generation rate is inspected for various flow parameters. Impacts of Brownian movement and thermophoresis on entropy generation have been also scrutinized. Nanofluid model with Brownian motion and thermophoresis mechanisms are analyzed. Additionally, activation energy and chemical reaction are also implemented. Governing flow expressions consist of momentum, energy and concentration of nanoparticles. Appropriate similarity transformations are utilized to convert the flow expressions to ordinary ones. The obtaining coupled nonlinear differential equations have been tackled with the help of BPV4c. Attention is particularly given to the entropy generation and Bejan number. The graphical outcomes are discussed for velocity, concentration, temperature, entropy generation and Bejan