

# Partial differential equations modeling of thermal transportation in Casson nanofluid flow with arrhenius activation energy and irreversibility processes

*Elsayed Mohamed Tag Eldin ,Khalid Fanoukh Al Oweidi, Wasim Jamshed, B. Shankar Goud, Imran Ullah, Usman ; Siti Suzilliana Putri Mohamed Isa ; Kamel Guedri ; Refed Adnan Jaleel*

## Abstract

<https://www.nature.com/articles/s41598-022-25010-x>

*Scientific Reports 2022, November*