|  |  |  |  |
| --- | --- | --- | --- |
| Title | Effects of exothermic/endothermic chemical reactions with Arrhenius activation energy on MHD free convection and mass transfer flow in presence of thermal radiation | | |
| Author(s) Name | Kh. Abdul Maleque | | |
| Contact Email(s) | maleque@aiub.edu | | |
| Published Journal Name | [Journal of Thermodynamics](https://www.hindawi.com/journals/jther/) | | |
| Type of Publication | Journal | | |
| Volume | Volume 2013 | Issue |  |
| Publisher | Hindawi | | |
| Publication Date | 2013/6/23 | | |
| ISSN | 1687-9244 | | |
| DOI | <http://dspace.aiub.edu:8080/jspui/handle/123456789/406> | | |
| URL | https://www.hindawi.com/journals/jther/2013/692516/ | | |
| Other Related Info. |  | | |
|  | | | |

|  |  |
| --- | --- |
| Abstract |  |
| A local similarity solution of unsteady MHD natural convection heat and mass transfer boundary layer flow past a flat porous plate within the presence of thermal radiation is investigated. The effects of exothermic and endothermic chemical reactions with Arrhenius activation energy on the velocity, temperature, and concentration are also studied in this paper. The governing partial differential equations are reduced to ordinary differential equations by introducing locally similarity transformation (Maleque (2010)). Numerical solutions to the reduced nonlinear similarity equations are then obtained by adopting Runge-Kutta and shooting methods using the Nachtsheim-Swigert iteration technique. The results of the numerical solution are obtained for both steady and unsteady cases then presented graphically in the form of velocity, temperature, and concentration profiles. Comparison has been made for steady flow () and shows excellent agreement with Bestman (1990), hence encouragement for the use of the present computations. | |