Analysis of incompressible and compressible fluid model of chemically reacting and heat conducting mixtures

M. Bulíček

Abstract: We present recent results for flows of a heat conducting electrically charged multicomponent chemically reacting non-Newtonian fluids. We show that under certain assumptions on data and the constitutive relations for such a fluid there exists a global in time and large data weak solution. We focus on the thermodynamical consistency and in particular we discuss the possibility of the so-called cross-effects (Soret effect, Dufour effect, Ohm law, Peltier effect, Joul heating, Thompson effect, Seebeck effect and also the generalized Fick law) and how they affect the existence analysis. Finally, we also discuss th epossible extension of th eresults to the compressible setting.