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Chemically-reacting non-linear fluid with variable transport properties KEREM UGUZ, Bogazici University, Department of Chemical Engineering, MEHRDAD MASSOUDI, (2) U.S. Department of Energy, National Energy Technology Laboratory (NETL) — We study the momentum and the heat transfer of a chemically reacting non-linear fluid between two long horizontal plates which are kept at constant but different temperatures. The top plate is sheared at constant speed, while the bottom plate is kept stationary. The physical parameters of the fluid, i.e. the viscosity, the thermal conductivity and the diffusion coefficient are assumed to be a function of the concentration. The boundary value problem is solved numerically using Chebyshev Spectral Method. A detailed parametric study of the velocity, the temperature, and the concentration profiles are presented for shear-thinning/thickening and chemically-thinning/thickening fluids.

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