

# Temperature effects in flowing polymeric liquids

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The mathematical discussion on the constitutive modeling of non-isothermal effects in the flow of viscoelastic fluids is still underway. What is now beyond doubt is that temperature changes in such flowing polymeric systems should at the very minimum capture the effects of the three processes; conductive heat transfer effects, entropic effects due to stress work and energetic effects due to the changes in the polymer orientations. Secondary effects, say due radiation and chemical reactions can be included or neglected depending on the exact nature of the physical situation. The deformation/relaxation processes encountered in various physical situations necessitate an appropriate modeling of the energetic effects either via the local fast variable or via the macroscopic conformational tensor. We discuss these issues with reference to applied physical problems involving transient non-isothermal flow of polymeric liquids.