1017-35-1 **Konstantina Trivisa***, University of Maryland, College Park. *On the dynamics of binary fluid mixtures.*

A multidimensional model is introduced for the phase transition dynamics of a binary mixture of compressible fluids. The model presented here can accommodate various physical contexts, namely "liquid - liquid", "gas - liquid" phase equilibria, as well as the phase transition of a mixture of two distinct gases, to product species due to combustion, the evolution of gaseous stars in astrophysics, the phase transition dynamics associated with semiconductors and others.

The model is formulated by the Navier-Stokes equations in Euler coordinates, which is now expressed by the conservation of mass, the balance of momentum and entropy and the species conservation equation. These equations take now a new form due to the choice of rather complex constitutive relations which are able to accommodate the multicomponent character of the mixture.

The existence of globally defined weak solutions of the Navier-Stokes equations for compressible reacting fluids is established by using weak convergence methods, compactness and interpolation arguments in the spirit of Feireisl and P.L. Lions. (Received April 07, 2005)