

## 日独共同大学院プログラム Mini-Course

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講義題目： Mathematical modeling of reactive multicomponent fluid systems.

Abstract:

We derive thermo-fluid-mechanical models for chemically reacting viscous fluid mixtures, based on rational thermodynamics. For this purpose, the resulting fundamental model - consisting of individual component balances for mass, momentum and energy - is simplified in a rigorous manner using scale separation. We consider also the special case of non-reactive mixtures where we obtain a model which we call the Navier-Stokes-Maxwell-Stefan system. This system has nice mathematical properties which we will also briefly discuss. If time allows, the modeling is extended to two-phase fluid systems with sharp interfaces.