On the modeling of diffusion processes in detailed chemistry post-processing for CFD

T. Zschunke, U. Senechal, M. Neumann, and W. E. Nagel

Abstract

Using a system of reaction cells and mixing cells (RCMCS), based on spatial distributions of velocity, temperature, and density, detailed reaction mechanisms can be solved without convergence problems even in a combustion context. In the presented paper diffusive mixing is introduced to the RCMCS method. The local diffusive exchange is controlled by a local exchange parameter, which can be interpreted as a measure for the turbulence controlled mixing. Numerical aspects and the appropriate application of parallel computing are investigated.