Mass transfer

$$\frac{\partial c_i}{\partial t} + \nabla \cdot (-D_i \nabla c_i) + \mathbf{u} \cdot \nabla c_i = R_i \tag{1}$$

Nomenclature

$\mathbf{u}$	is the velocity vector
c_i	is the concentration of the species
D_i	denotes the diffusion coefficient
R_i	is a reaction rate expression for the species