Summary of "Progress-variable approach for large-eddy simulation of non-premixed turbulent combustion"

Yu Cang 018370210001

2019-03-15

To simulate the combustion process, a set of partial differential equations needs to be solved, including the continuity equation, the momentum equation, the energy equation and the species equations. There exist quite strong non-linear source terms in the energy equation and the species equations, which pose difficulties to traditional solution methods.

Instead of treating these non-linear terms directly, a new approach is introduced in this paper, where two mapping variables are introduced. In this way, all of the detailed chemical processes are mapped to a reduced system of tracking scalars. The governing equations of these mapped variables are much easier to handle, as the source terms do not exist any more.