

1. Record Nr.	UNINA9910688408103321
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Titolo	Simulation of Turbulent Flows with and without Combustion with Emphasis on the Impact of Coherent Structures on the Turbulent Mixing
Pubbl/distr/stampa	KIT Scientific Publishing, 2016
ISBN	1000047969
Descrizione fisica	1 online resource (XXXI, 215 p. p.)
Soggetti	Biotechnology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Sommario/riassunto	The analysis of turbulent mixing in complex turbulent flows is a challenging task. The effective mixing of entrained fluids to a molecular level is a vital part of the dynamics of turbulent flows, especially when combustion is involved. The work has shown the limitations of the steady-state simulations and acknowledged the need of applying high-fidelity unsteady methods for the calculation of flows with pronounced unsteadiness promoted by large-scale coherent structures or other sources.