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Hanjalić, Kemal; Borello, Domenico; Suga, Kazuhiko; Venturini, Paolo

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Advances in Turbulence, Heat and Mass Transfer

Kemal Hanjalić¹ · Domenico Borello² · Kazuhiko Suga³ · Paolo Venturini²

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Convective heat and mass transfer driven and controlled by turbulence by multifaceted interactions pose ever more new challenges in various branches of engineering, technology and the environment. New insights and discoveries revealed by advanced numerical simulations, laser-based and other novel laboratory diagnostics, both in single- and multi-phase non-reacting and reacting fluid flows, are still awaiting full understanding of the physical phenomena involved, especially of the role of turbulence, its control and manipulation. This Issue of Flow, Turbulence and Combustion aspires to highlight recent progress and to provide an archival record of some of the current trends and achievements in this research field.

The Issue contains 13 articles, selected from 178 papers presented at the 10th International Symposium on Turbulence, Heat and Mass Transfer, held in Rome, Italy, in the period 11–15 September, 2023. This triennial event, initiated in 1994 under the auspices of ICHMT (International Centre for Heat and Mass Transfer), continues to provide a forum for scientists and engineers from academia and industry to present and discuss advances in research on the role of turbulence in heat and mass transfer. Every paper in this Issue was subjected to the same rigorous review process as that applied to all Flow, Turbulence and Combustion submissions.

The present journal issue covers a variety of topics that include:

✉ Kemal Hanjalić
K.Hanjalic@TUDelft.nl

Domenico Borello
domenico.borello@uniroma1.it

Kazuhiko Suga
suga@omu.ac.jp

Paolo Venturini
paolo.venturini@uniroma1.it

¹ Delft University of Technology, Delft, The Netherlands

² Università degli Studi di Roma ‘La Sapienza’, Rome, Italy

³ Osaka Metropolitan University, Osaka, Japan

- The effects of *wall-surface roughness* on transition to turbulence, separation in the roughness sublayer, evolution of roughness-induced cross-flow vortices due to free-stream turbulence, transition in ICL capsule implosion,
- Dynamics of *particles - and droplet-laden flows*: transition to turbulence in a bed with spherical pebbles, agglomeration of spheroidal particle pairs, droplet evaporation in mock jet-engine conditions, binary droplet collisions in bioprinting, cavitation in horizontal axial hydro-turbine.
- *Turbulence structure* in canonical and complex flows: energetic low-dimensional subspaces in pipe flows, strongly-stable Couette flow over thermally heterogeneous surfaces, spatio-temporal characteristics of flow over partially submerged cylinder, premixed ammonia combustion in a swirl-stabilised burner, and others.

The editors wish to thank all authors and reviewers for their efforts towards making this Issue a valuable contribution to the archival literature on the role of turbulence in heat and mass transfer.

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