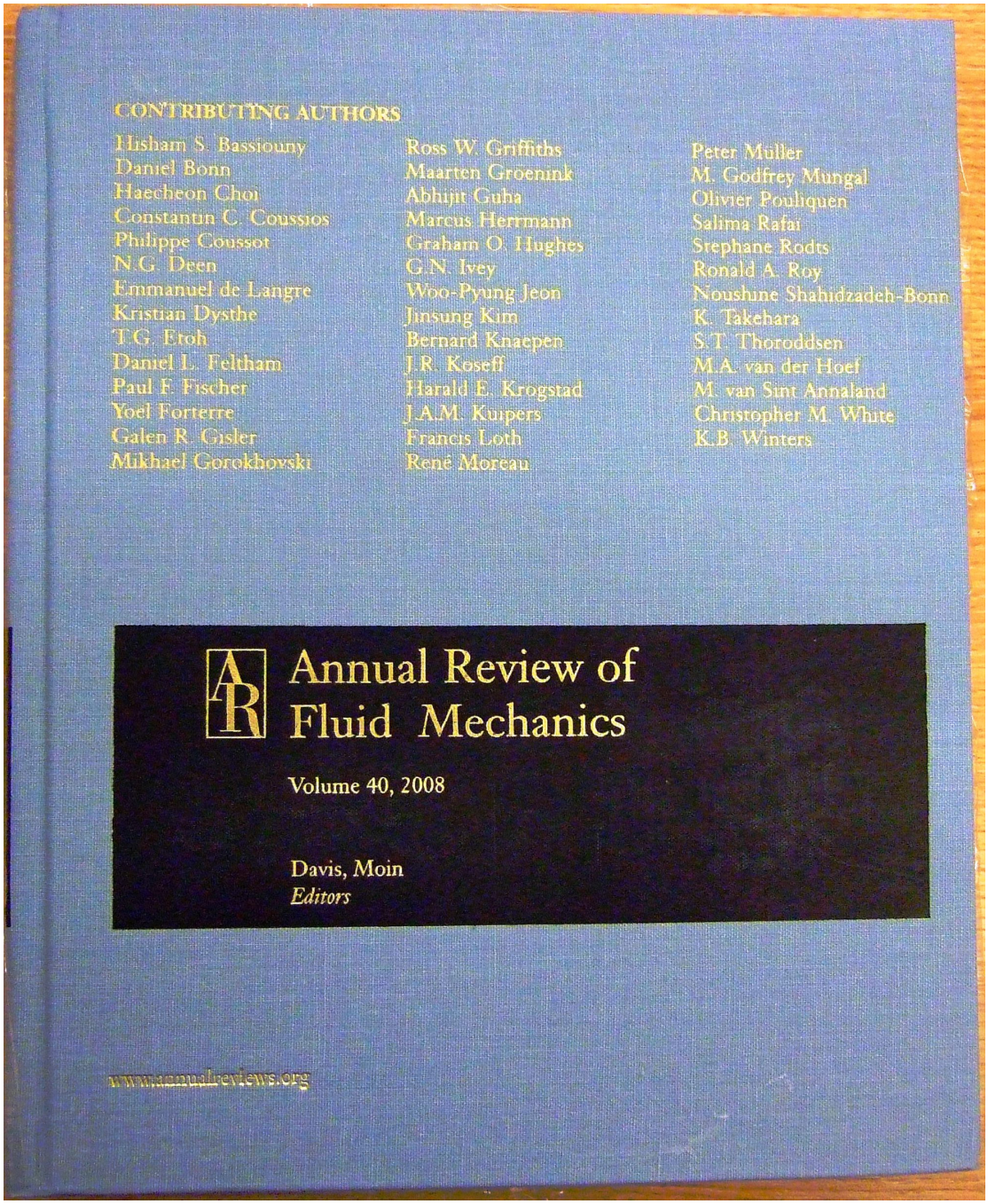
Link to the PDF of the article reprint is given on the second page below.



The Journal is published from Palo Alto, USA, and has an Impact Factor of 12.5. Each year only one single issue is published and contains about 15 articles written by invited authors worldwide.

Transport and Deposition of Particles in Turbulent and Laminar Flow

Abhijit Guha

Aerospace Engineering Department, University of Bristol, Bristol BS8 1TR, United Kingdom; email: A.Guha@bristol.ac.uk

Annu. Rev. Fluid Mech. 2008. 40:311–41

The *Annual Review of Fluid Mechanics* is online at fluid.annualreviews.org

This article's doi:
10.1146/annurev.fluid.40.111406.102220

0066-4189/08/0115-0311$20.00

Key Words

turbulent, diffusion, turbophoresis, thermophoresis, inertial impaction, Lagrangian tracking, Eulerian advection-diffusion

Abstract

This article reviews the physical processes responsible for the transport and deposition of particles and their theoretical modeling. Both laminar and turbulent processes are considered, emphasizing the physical understanding of the various transport mechanisms. State-of-the-art computational methods for determining particle motion and deposition are discussed, including stochastic Lagrangian particle tracking and a unified Eulerian advection-diffusion approach. The theory presented includes Brownian and turbulent diffusion, turbophoresis, thermophoresis, inertial impaction, gravitational settling, electrical forces, and the effects of surface roughness and particle interception. The article describes two example applications: the deposition of particles in the human respiratory tract and deposition in gas and steam turbines.