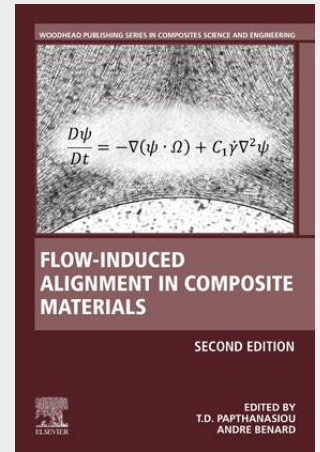


Flow-Induced Alignment in Composite Materials

The purpose of aligning short fibers in a fiber-reinforced material is to improve the mechanical properties of the resulting composite. Aligning the fibers, generally in a preferred direction, allows them to contribute as much as possible to reinforcing the material. The first edition of this book detailed, in a single volume, the science, processing, applications, characterization and properties of composite materials reinforced with short fibers that have been orientated in a preferred direction by flows arising during processing. The technology of fiber-reinforced composites is continually evolving and this new edition provides timely and much needed information about this important class of engineering materials. Each of the original chapters have been brought fully up-to-date and new developments such as: the advent of nano-composites and the issues relating to their alignment; the wider use of long-fiber composites and the appearance of models able to capture their orientation during flow; the wider use of flows in micro-channels in the context of composites fabrication; and the increase in computing power, which has made relevant simulations (especially coupling flow kinematics to fiber content and orientation) much easier to perform are all covered in detail. The book will be an essential up-to-date reference resource for materials scientists, students, and engineers who are working in the relevant areas of particulate composites, short fiber-reinforced composites or nanocomposites.



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