

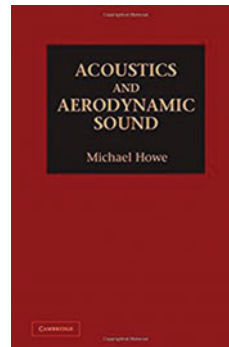
properties and to diversify the applications of SMPs. Experimental investigations revealed that it would be possible to develop SMP resin and composite with a high T , good shape fixity and near complete recovery. Nanostructure tailoring of the SMP is presented at length; the nanosized reinforcements considered are carbon nanotubes, carbon nanofiber, clay, polyhedral oligomeric silsesquioxane and hybrid filler. While carbon black-reinforced composites show limited shape recovery, carbon nanotube-reinforced composites showed nearly full shape recovery. The SMP composites with graphene oxide (GO), with increasing percentage of GO, showed improvements on toughness, tensile strength, elongation at break and scratch hardness.

The fifth and final section (Chapters 14–18) effectively puts together the broad range of topics on SMPs and SMP composites used for the aerospace applications and the like. The topics extend from morphing aerostuctures, unimorph composite actuators and thermal energy activated deployment of a packaged unmanned aerial vehicle to shape memory metal rubber morphing skins and printed active origami.

In summary, owing much to the broad coverage of the topics, the emphasis is clearly on the book's subtitle: *Novel Synthesis, modelling, Characterisation and Design*. Backed by the numerous examples with figures, tables and references, the book is an excellent resource for shape memory practitioners with applications in mind and recommended as an essential read for both novices and experienced engineers who are endeavoring to pin down the shape recovery characteristics of SMPs and SMP composites

under various programmable and stimulus conditions.

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Acoustics and Aerodynamic Sound

M. Howe

Cambridge University Press, The Edinburgh Building, Cambridge, CB2 8RU, UK. 2015. 295pp. Illustrated. £55. ISBN 978-1-107-04440-1.

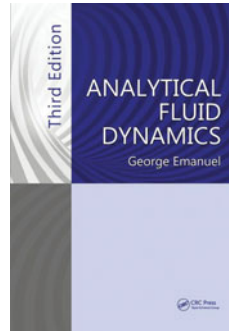
Michael Howe has written several books covering the field of aeroacoustics. This book, *Acoustics and Aerodynamic Sound*, is intended as a 'short, one-semester introduction' to the subject for undergraduate and graduate scholars, and, accordingly, it concentrates on fundamental concepts and analytical solutions to simple problems.

Chapter 1 provides an introduction to acoustics, including the wave equation and

various types of acoustic source. Chapter 2 introduces Kirchoff's formula and goes on to derive compact Green's functions for bodies of various shapes. Chapter 3 deals with radiation of sound from a baffled piston and diffraction by edges and apertures. Sound produced aerodynamically is considered in Chapter 4, starting with Lighthill's theory of aerodynamic sound and then extending it to look at interactions between vortices and surfaces. Finally, Chapter 5 considers propagation of sound in and from ducts and apertures. Example problems are given with each chapter and solutions are provided with some of these to facilitate self-study. A useful bibliography is provided and an index is included.

The book is clearly and concisely written and certainly achieves its objective of being a useful text to accompany an academic course. Practicing engineers and others seeking a more complete reference work would, perhaps, be better advised to seek out a copy of *Acoustics of Fluid-Structure Interactions* (Cambridge University Press, 1998) by the same author.

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Analytical Fluid Dynamics – Third edition

G. Emanuel

CRC Press, Taylor & Francis Group, 6000 Broken Sound Parkway NW, Suite 300, Boca Raton, FL, 33487-2742, USA. 2016. Distributed by Taylor & Francis Group, 2 Park Square, Milton Park, Abingdon, OX14 4RN, UK. 632pp. Illustrated. £108. (20% discount available to RAeS members via www.crcpress.com using AKQ07 promotion code). ISBN 978-1-4987-1569-0.

This book is a serious introduction to fluid dynamics with rigorous mathematical analysis of fundamental topics. It consists of 29 chapters, which are grouped into five sections. A general introduction to analytical fluid dynamics is given in Sections I, III and IV, while more specific topics, namely advanced gas dynamics and boundary-layer theory are discussed in Sections II and V, respectively.

Governing equations are established in Section I, with tensor notation employed and used throughout the book. Also notable are exercise problems at the end of each chapter which often build up on what have been