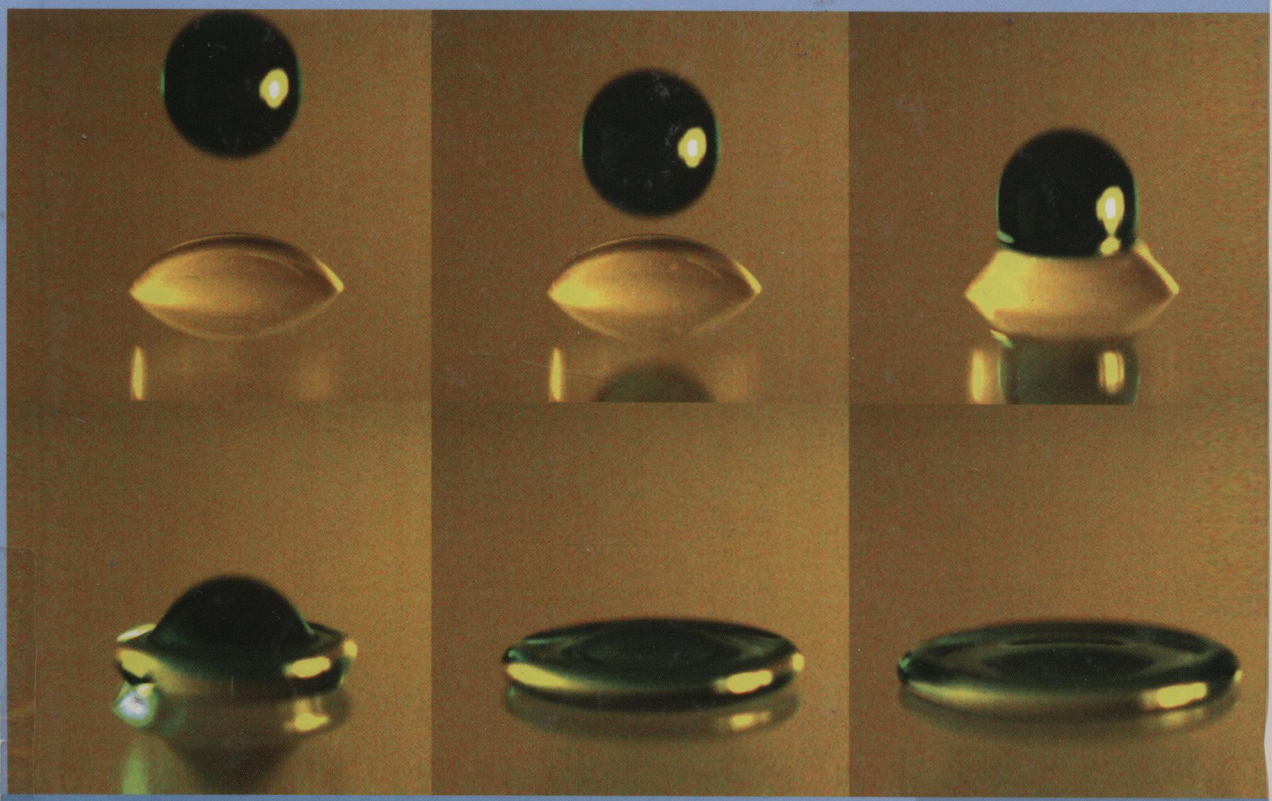
EDITORS | IAN M. HUTCHINGS | GRAHAM D. MARTIN

INKJET TECHNOLOGY FOR DIGITAL FABRICATION



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Inkjet Technology for Digital Fabrication

Edited by

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Inkjet Technology for Digital Fabrication

About the Editors

Ian M. Hutchings has been GKN Professor of Manufacturing Engineering at the University of Cambridge since 2001, working in the Institute for Manufacturing which is part of the Department of Engineering. Previously, he was Reader in Tribology at the Department of Materials Science and Metallurgy. His research interests are interdisciplinary, crossing the boundaries between engineering, materials science and applied physics. He established the Inkjet Research Centre at Cambridge in 2005 with support from the UK Engineering and Physical Sciences Research Council and several academic and industrial collaborators.

Graham D. Martin has been Director of the Inkjet Research Centre at the Institute for Manufacturing, University of Cambridge since 2005. He has a PhD in solid state physics and has worked in inkjet-related research, consultancy and product development for many years. The companies he has worked for include Cambridge Consultants Ltd (Non Impact Printing Systems group leader), Elmjet (Technical Director) and Videojet (Director of Technology).

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Preface

From its initial use for product marking and date coding in the 1980s, and its development and widespread adoption for the desktop printing of text and images in the following two decades, inkjet technology is now having an increasing impact on commercial printing for many applications including labels, print-on-demand books and even newspapers. With great intrinsic flexibility and very short set-up times, inkjet printing is also challenging conventional methods for more specialised uses such as ceramic tile decoration and textile printing.

Exactly the same processes by which individual drops of liquid are produced and directed onto a substrate under digital control can be used to deposit materials other than the coloured 'inks' used for text and graphics. Metals, ceramics and polymers, with a wide range of functionality, can all be printed by inkjet methods, and exciting possibilities are also raised by the ability to print biological materials, including living cells. We are at the dawn of a digital age for printing, and it is the aim of this book to show how the changes which are happening in that world will lead to equally revolutionary changes in the ways in which we can manufacture products. Digital fabrication offers the possibilities of tailoring materials at a microscopic level, and positioning them exactly where they are required, with exactly the right properties. It has the potential to generate structures and functions which cannot be attained by other methods, and which are limited only by the creativity and ingenuity of the designer. It forms a new and powerful addition to the portfolio of methods available for manufacturing.

We are very grateful to the authors who have contributed to this volume, which we hope will help to define this rapidly moving field of research and provide a valuable resource for those who want to explore it further. It is impossible to forecast how it will develop, even over the next 10 years. What appears certain to us is that it will not stand still.

Ian M. Hutchings and Graham D. Martin
Cambridge
April 2012

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