

PREFACE

Dear reader,

In the past few years we have observed an interesting mutual interest of two fields of research and development in each other. Life sciences area researchers discovered the opportunities offered by micro- and nanotechnology, while people from the microfluidics and BIOMEMS area discovered the application potential of these technologies in cell biology. Unfortunately, these two research communities share little in common: they read and publish in different scientific journals, have incompatible jargons, attend separate conferences, and have a different scientific approach and culture. This is most strikingly illustrated when you give a MEMS researcher some cells to experiment with, or hand over a couple of chips to a cell biologist. Or imagine explaining a microengineer different intracellular apoptotic pathway or a cell biologist about tensile stress in underetched LPCVD membranes.

And yet, there is an enormous potential of combining the expertises available in these two fields. It is our goal to illustrate this potential with this book focusing on microfluidics technologies for "cellomics", research on or with cells. In our view, the field is still too immature to compile a textbook for students, and this volume is rather meant to be a collection of first class papers of leaders in this emerging field. This volume will enable researchers from both communities to get a rapid "state of the art" overview, and also to get an impression what kind of possibilities this area offers. Micro- and nanotechnologists will get inspiration about applications, life science researchers about technological capabilities.

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Enough explanation and introduction; we hope and actually are convinced that this book contains ample material for you to become even more motivated and stimulated to work in this exciting and colorful field of research. We also believe that, after the successes of MEMS for physical and analytical (bio)chemical applications, this book will be a nice illustration of the next important application field, MEMS for cellomics.

With wish you a very enjoyable and inspiring reading!

Helene Andersson and Albert van den Berg

Enschede, Faculty Club, June 2004.