

# Preface

This book is written to serve as textbook for the *1st Summer School on Complex Fluid-Flows in Microfluidics* held in the Faculty of Engineering of the University of Porto (Portugal, 2017). Moreover, we also expect it to be useful as a pedagogical introduction for any researcher starting to work on microfluidics in combination with complex fluids. Having this latter and broader objective in mind, this book covers the fundamentals of the theoretical, experimental, and numerical approaches distributed in five chapters: The first one is fully dedicated to complex fluids and the role that microfluidic can play as a platform to perform rheological characterization beyond the limits of the macroscopic rheometers; the second one focus its attention to the different experimental techniques to develop microfluidic devices; the third ones details and assesses the advantages and disadvantages of the main the experimental techniques for the characterization of the complex fluid-flow at microscale; the forth and the fifth ones are fully oriented to numerical aspect, that is, computational simulations of the fluid-flow and numerical optimization, respectively. In every chapter, the reader will find ten practical advices that any novice should follow to avoid problems when dealing with complex fluid-flows at microscale.

I am personally grateful to all the co-authors for their commitment and generous effort in preparing their contributions to this book.

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