



# Organic and Printed Electronics

Fundamentals and Applications

edited by

**Giovanni Nisato**

**Donald Lupo**

**Simone Ganz**



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# **Organic and Printed Electronics**



## Preface

The goal of this book is to provide an introductory knowledge of organic and printed electronics to students and engineers. There are many monographs, dissertations, and research papers available for higher-level studies on the topic. Our motivation for writing this book was to provide a preliminary reference guide and manual for beginners and a support tool for teachers. Such a textbook did not exist two decades ago when some of us first encountered this field, and this situation still seems to continue: we often have to use whatever materials we have at our disposal when introducing newcomers to this field.

We begin the book by presenting the contents and structure of this book, which are the result of a long process as we considered different perspectives including analyses of the educational courses on organic electronics in Europe. Besides more technical chapters, we chose to introduce topics such as entrepreneurship and environmental impact, which are key to making a lasting societal contribution.

This book took over four years to complete, which appears like an eternity in a fast-moving technical field. The process also naturally forced us to focus on topics that have reached a certain level of maturity. This project was a rewarding group effort. The chapters have been contributed by many talented authors, who are all experts in their fields, and we are greatly indebted to them for their trust and patience and for transmitting in their chapters a working knowledge that is connected to practice.

In such a multidisciplinary field, it is not possible to cover all topics within a book of this size. In this book, we focus on printing and solution coating rather than on vacuum deposition. Additionally, we decided to specialize on the handling of liquid deposition and on understanding the physics behind it instead of simply summarizing all deposition processes that are used in organic electronics today. Many concepts for devices are very similar, therefore, vacuum processing is presented indeed briefly in several chapters. Further information on vacuum processing is available in specialized

publications. As new organic molecules are being synthesized and reported almost weekly, a thorough introduction to the chemistry of organic and printable semiconductors would require a book in itself. Flexibility and thin-film mechanical properties are very important and play a role in the design, processing, and final functionality of printed electronics. Although these have been mentioned at various instances in the book, they have not been presented in an independent chapter. Further, several devices such as printed memories and optical sensors are not covered in this textbook. Hopefully, there will be a chance to expand on these and other topics in a further edition.

**Giovanni Nisato**

**Donald Lupo**

**Simone Ganz**

January 2016

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