

<<纳米制造手册>>

图书基本信息

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### 内容概要

现代工业使用的众多器件和系统变得越来越小，有的达到纳米尺寸级别。纳米制造的目标在于构建大量高效低成本的用在组件、器件和系统中的纳米结构。纳米制造是所有纳米技术领域的关键所在，特别是纳米技术在传统的工程和科学领域应用方面。本书覆盖了最重要的纳米制造技术，每章都全面介绍了一种纳米制造技术。适合化工、材料、物理等相关专业的人员阅读。

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## 章节摘录

版权页：插图：More specifically, functional inks have enabled a wide range of applications in the area of displays and microelectronics. For example, light emitting polymers (LEPs) have been printed to fabricate polymer light emitting diodes (PLEDs) [4]. Bottom-gate organic field effect transistors have also been fabricated depositing all the active materials (semiconductor, gate dielectric, and electrodes) using lithography-free printing techniques [5,6]. Nevertheless, the development of highly conductive, printable inks necessary to fabricate conductor lines with low parasitics has proved challenging. Recently, the introduction of inks containing metal nanoparticles or metal-containing organic complexes has allowed to print lines with high conductivity using low-temperature processes. In the following, we will discuss the different types of metal inks available for display and microelectronic applications. Among the large range of applications of ink-jet printing of functional materials, in this work we will focus on display applications (organic light emitting diodes (OLEDs), liquid crystal displays (LCDs)) and on electronic applications (active matrix backplanes, sensors, radio frequency identification tags (RFIDs), digital lithography and ink-jet etching). It will be clear that for this range of applications the main fundamental limitation of ink-jet printing is the intrinsic low resolution of the technique. On the other hand, from a manufacturing point of view it has proven difficult to achieve high yield and deposition uniformity to transfer ink-jet printed electronic devices to the production floor. In order to improve the resolution of ink-jet printing, for example, in order to print short-channel field effect transistors (FETs), a novel approach will be reviewed. This is a self-aligned technique that relies on the movement of a droplet on a substrate, induced by forces exerted on the ink by a contrast in surface energy. This can be achieved by pre-patterning high-resolution structures defining areas with different surface energy on a substrate. An alternative, lithography-free approach will also be discussed.

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