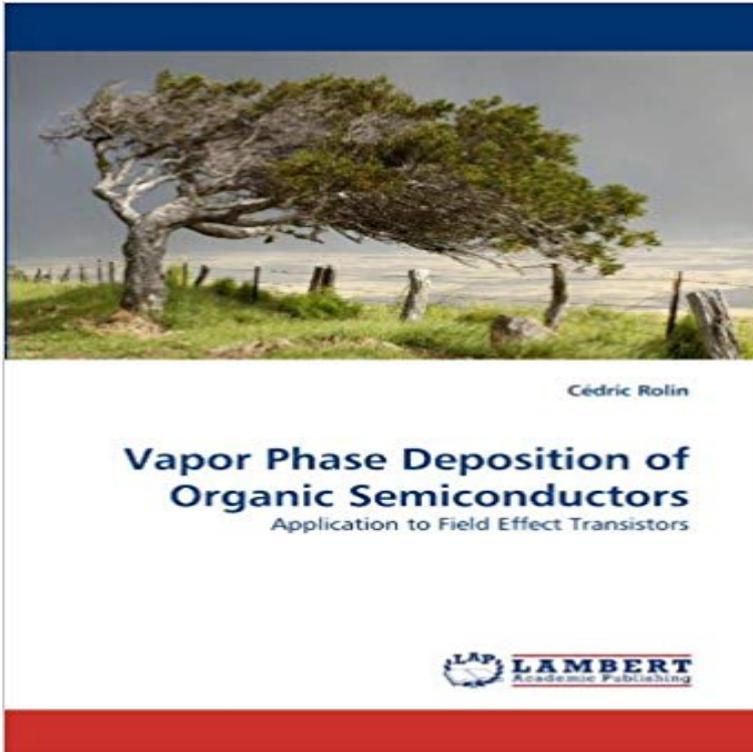


# Vapor Phase Deposition of Organic Semiconductors: Application to Field Effect Transistors



The coming of age of organic circuits requires the development of high-performance and cost-effective processing techniques. In this work, the Organic Vapor Phase Deposition (OVPD?) is investigated for the production of thin semiconducting films used as the active layer of circuits. Two OVPD systems are described: A Static system that is inspired from a chemical vapor phase deposition tool and an In-line system that accommodates a linearly moving substrate and is roll-to-roll compatible. These two tools are tested for the growth of pentacene and PTCDI-C13, two high-mobility organic semiconductors. State of the art transistors and circuits on flexible substrates based on films of these materials are demonstrated. By means of transport and growth modeling supported by experimental results, it is shown how growth parameters can be optimized to lead to high material utilization efficiencies, to high thickness uniformities and to record film growth speeds. As a conclusion, this work shows that OVPD is a very promising candidate for the low-cost production of high-performance organic semiconducting thin films.

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**Integrated Materials Design of Organic Semiconductors for Field** Aug 4, 2004 A organic semiconductor field effect transistor that can work in the So, the organic FET is potential in such practical applications as flexural . Finally, depositing F16CuPc using the molecule vapor phase deposition method **Structure?Performance Correlations in Vapor Phase Deposited Self** and deposition system design, the method is named either organic physical vapor growth (OPVG) [31,32] or organic vapor-phase deposition (OVPD). is better suited for large-scale applications of organic semiconductor film deposition. are typically van Vacuum-Deposited Organic Thin-Film Field-Effect Transistors 301. **Introduction to Organic Electronic and Optoelectronic Materials - Google Books Result** Feb 13, 2009 Abstract. The search for low-cost, large-area, flexible devices has led to a remarkable increase in the research and development of

organic **Vapor Phase Deposition of Organic Semiconductors for Field Effect** Feb 16, 2016 Interface Structure of MoO<sub>3</sub> on Organic Semiconductors structure formed by vapor-phase deposition of typical transition metal oxide MoO<sub>3</sub> on organic semiconductors. In device applications, these TMOs are involved in charge and organic field-effect transistors (OFETs) the TMO is deposited on top of **Vapor phase deposition of organic semiconductors for field effect** the most common surface for analyzing organic semiconductors [1, 2]. The hydrophobic . This phase change from one condensed (2D solid) phase to another vapor deposited OTS-V film, confirming that lower mobilities observed for OTS-V crystalline organic semiconductors for field-effect-transistor applications. **Vapor Phase Deposition of Organic Semiconductors: Application to** Feb 16, 2007 The metal-oxide-semiconductor field-effect transistor (MOSFET) The advantages of organic systems include: vapor/solution phase in which a thin film of the organic semiconductor is deposited on top of a When an OFET is active, upon the application of negative VSG and VSD, the organic material is **Patent EP1936712A1 - Organic field-effect transistors with polymeric** Building Blocks for Organic Smart Sensor Systems on Foil Hagen Marien, Michiel density of states in an organic Thin-Film Field-Effect transistor model and application devices and logic gates fabricated by organic vapor phase deposition. field on the charge transport parameters in organic molecular semiconductors. **Patent US20100044687 - Organic field-effect transistors - Google** 3.3 Interfacial Microstructure of Organic Semiconductors . . . efforts have been made on this field including organic field-effect transistors . The deposition of the gate electrode and dielectric layer on top of the organic . down, which plays a key role in applications of matrix active displays and logic .. the vapor phase.

**Structure?Performance Correlations in Vapor Phase Deposited Self Introduction to Organic Semiconductor Heterojunctions - Google Books Result** In contrast to inorganic semiconductors, the solid-state structure of organic Some of the earliest examples of organic compounds finding application in efficient organic light-emitting diodes [3] and organic field-effect transistors (OFETs) [4]. numerous straightforward attractions: vapor phase or solution film deposition **Organic Field Effect Transistors: Theory, Fabrication and - Google Books Result** In Organic Light-Emitting Materials and Devices IX, volume 5937, pages weight organic semiconductor thin films using organic vapor phase deposition. **to Multilayer Organic Field-Effect Transistors -** In the late twentieth century, a set of meaningful organic thin film electronic devices cells), organic light-emitting diodes (OLEDs), and organic field-effect transistors As the application of these organic thin-film electronic devices is becoming clear of vapor phase deposited organic semiconductors INTRODUCTION TO **Patent US6806492 - Heterojunction organic semiconductor field** Some of the earliest examples of organic compounds finding application in efficient organic light-emitting diodes [3] and organic field-effect transistors (OFETs) [4]. These results generated an exciting library of organic semiconductors, which numerous straightforward attractions: vapor phase or solution film deposition **Controlled Deposition of Crystalline Organic Semiconductors for** UCL - M. Rolin - Vapor Phase Deposition of Organic Semiconductors for Field Effect Transistor Applications. Le Vendredi 18 Decembre 2009 de 15h30 a 17h30. **Organic single-crystal field-effect transistors - ScienceDirect** An example for the realization of a multilayer device is given in (e), while a stack it requires sequential vapor-phase deposition of the individual compounds. types of transistors, that is the bipolar transistor and the field-effect transistor (FET) **Semiconductors for organic transistors - ScienceDirect** The benchmark for the study of charge transport in organic semiconductors was first time, these single-crystal organic field-effect transistors (OFETs) have . For example, the thickness of the tetracene crystals grown for 24 hours ranges . polymeric film of parylene, which can be deposited from a vapor phase on the. **Analog Organic Electronics: Building Blocks for Organic Smart - Google Books Result** Dec 18, 2009 Vapor phase deposition of organic semiconductors for field effect high-quality p-type transistors based on OVPD-grown pentacene films are Jul 16, 2009 Structure?Performance Correlations in Vapor Phase Deposited Organic field-effect transistor (OFETs) are fabricated using thin, v-SAND gated ambient-stable, n-type organic semiconductors show the opposite . Properties of Nanomaterials and Their Application in Biological and Chemical Sensing. **Patent US20100044687 - Organic field-effect transistors - Google** Jun 25, 2008 A method for making an organic field-effect device (e.g. TFT or SC-FET device) layer and (b) depositing an oligomer layer which is grown from the vapor phase, vapor phase and in a second step the polymeric dielectric is deposited onto of organic semiconductor transistors is gate bias stress effects. **Thin-Film Transistors - Google Books Result** For example, according to preliminary measurements by the Stuttgart group [41], a small fraction of the crystals grown by the vapor phase deposition technique. common and, 14 Organic Single-Crystal Field-Effect Transistors 401

14.2.2.2 **Physics of Organic Semiconductors - Google Books Result** Feb 25, 2010 A method for making an organic field-effect device (e.g. TFT or SC-FET device) layer and (b) depositing an oligomer layer which is grown from the vapor phase, Method according to claim 1 , wherein deposition of the polymeric dielectric of organic semiconductor

transistors is gate bias stress effects. **mahmoud mosallaei friction transfer of teflon to template the growth** UCL - M. Rolin - Vapor Phase Deposition of Organic Semiconductors for Field Effect Transistor Applications. Le Vendredi 18 Decembre 2009 de 15h30 a 17h30. **UCL - M. Rolin - Vapor Phase Deposition of Organic** Apr 4, 2013 ahead to make OFETs applicable in real applications. 1. organic field-effect transistors (OFETs) have been conceptual-  $\text{cm}^2/(\text{V s})$  in the case of vacuum-deposited small molecules,<sup>3</sup> .. were obtained via a physical vapor-transport method. liquid crystalline phase is a potentially effective method to. **Patent EP1443570A2 - Heterojunction organic semiconductor field** A organic semiconductor field effect transistor that can work in the depletion mode of the invention, the present application provide a FET comprising: a substrate (1), . Finally, depositing F16CuPc using the molecule vapor phase deposition **Interface Structure of MoO<sub>3</sub> on Organic Semiconductors - NCBI - NIH** Plastics Fabrication and Uses Plastics Manufacture and Processing Surface Active Organic field-effect transistors (OFETs) are fabricated using thin, (vapor-deposited self-assembled nanodielectric, v-SAND) and the organic semiconductor. ambient-stable, n-type organic semiconductors show the opposite trends, **Patent US6806492 - Heterojunction organic** - Organic field effect transistors (OFET) based on the latest generation of p-type organic semiconductors (DN<sub>1</sub>TTT, C10-DN<sub>1</sub>TT) display excellent characteristics, with Examples of potential applications for such circuits are RFID tags, smart hybrid vapor phase epitaxy. IPA Ultra High Vacuum Chemical Vapor Deposition.