
Pengantar

Elektronika Organik

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Silabus MK Elektronika Organik

- **Tujuan:**

Memberikan pemahaman tentang perkembangan teknologi dan penggunaan komponen elektronika berbahan organik serta kemampuan untuk menganalisis komponen-komponen elektronika organik.



Silabus Elektronika Organik

Pokok Bahasan:

- Steady-State **Fotokonduktif** dalam Bahan Organik;
Model **Temperatur Efektif** untuk Medan Listrik;
- Deskripsi **Aliran Muatan** dalam Bahan Organik;
- **Mobilitas dan Kecepatan** Pengukuran dalam Organik;
- **Potovoltaik Organik**;
- Transistor Thin-film Organik, **OFET-CMOS & Memory**;
- Optoelektronik **Bio-Organic berbasis DNA**;
- Mekanisme Emisi dalam **OLED**.

Silabus Elektronika Organik

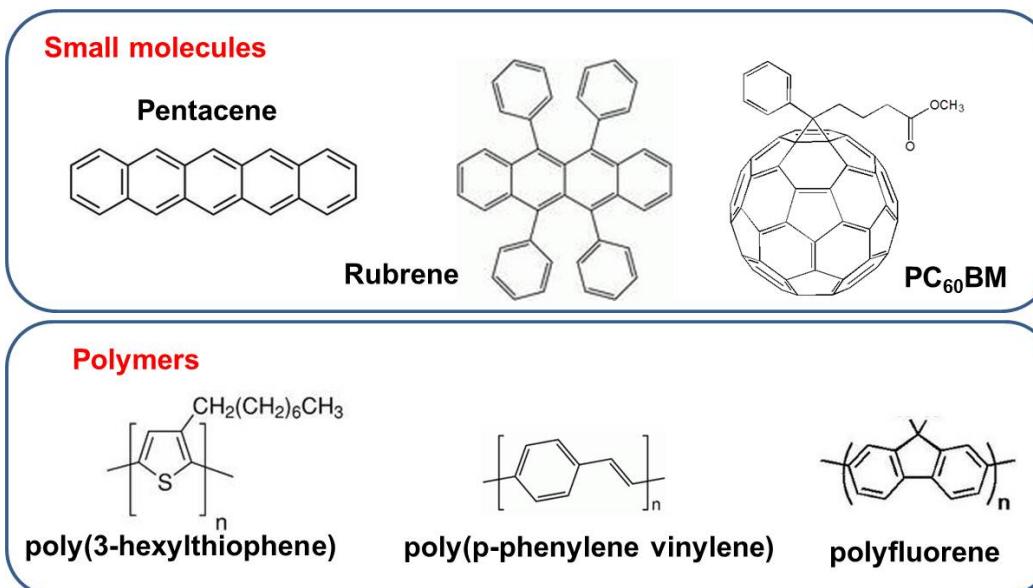
Referensi:

- Christof Woll, [Organic Electronics: Structural and Electronic Properties of OFETs](#).
- Franky So, [Organic electronics: Materials, Processing, Devices and Applications](#).
- Ioannis Kymissis, [Organic Field Effect Transistors: Theory, Fabrication and Characterization](#).
- Sam-Shajing Sun and Larry R. Dalton, [Introduction to Organic Electronics and Optoelectronic Materials, and Devices](#).
- Sam-Shajing Sun, Niyazi, Serdar Sariciftci, [Organic Photovoltaics: Mechanisms, Materials, and Devices](#)

Definisi Organik

Ruang lingkup ORGANIK:

- Dapat terurai → hayati
- Terkait material Karbon
- Identik dengan Polimer



Elektronika Organik vs. Anorganik

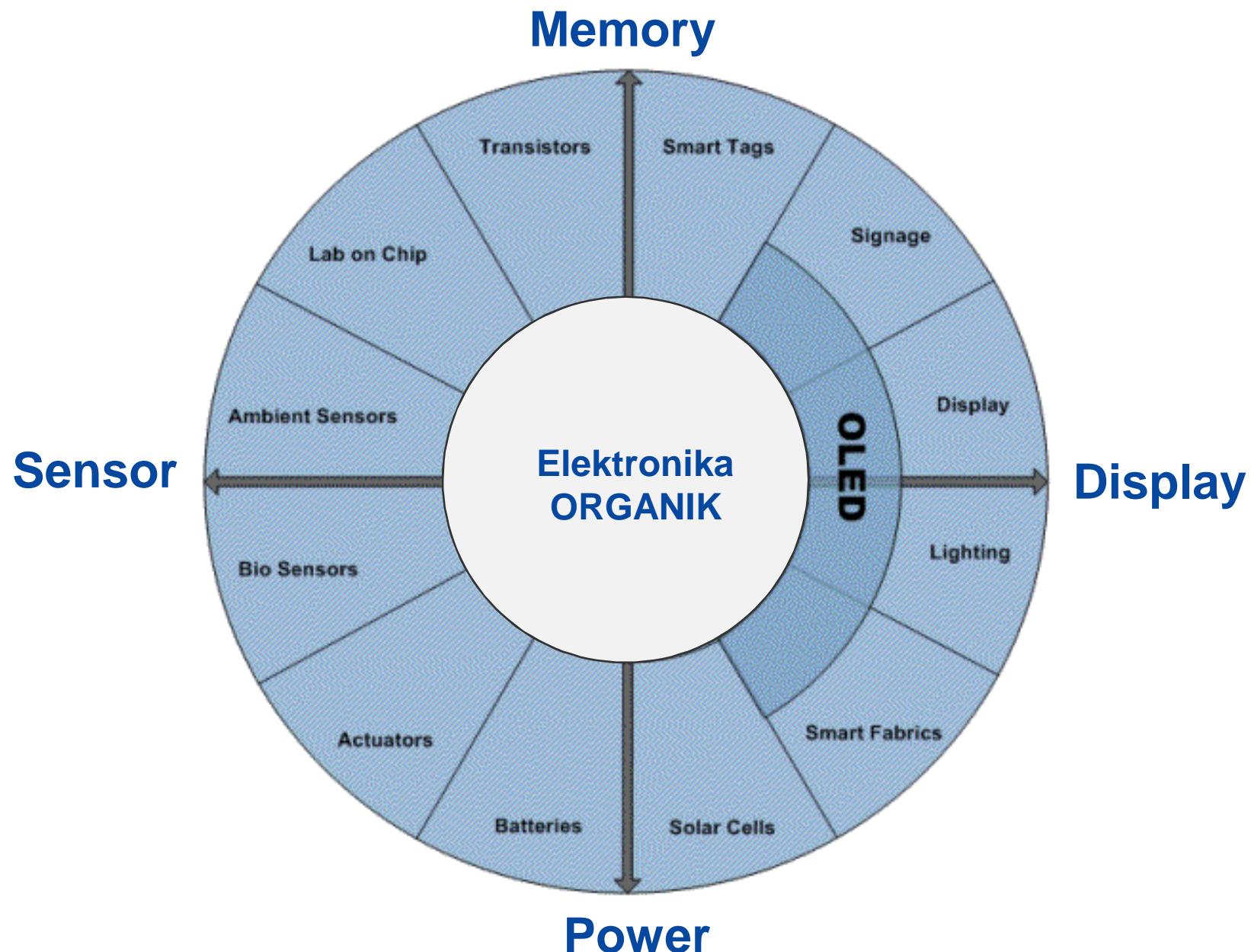
Anorganik

- Proses Fabrikasi Mahal
- Material Mahal
- Beracun (gas)
- Substrat khusus
- More power
- Integrasi bersyarat

Organik

- Mudah fabrikasi
- Biaya murah
- Ramah lingkungan
- Substrat fleksibel
- Low power
- Mudah terintegrasi

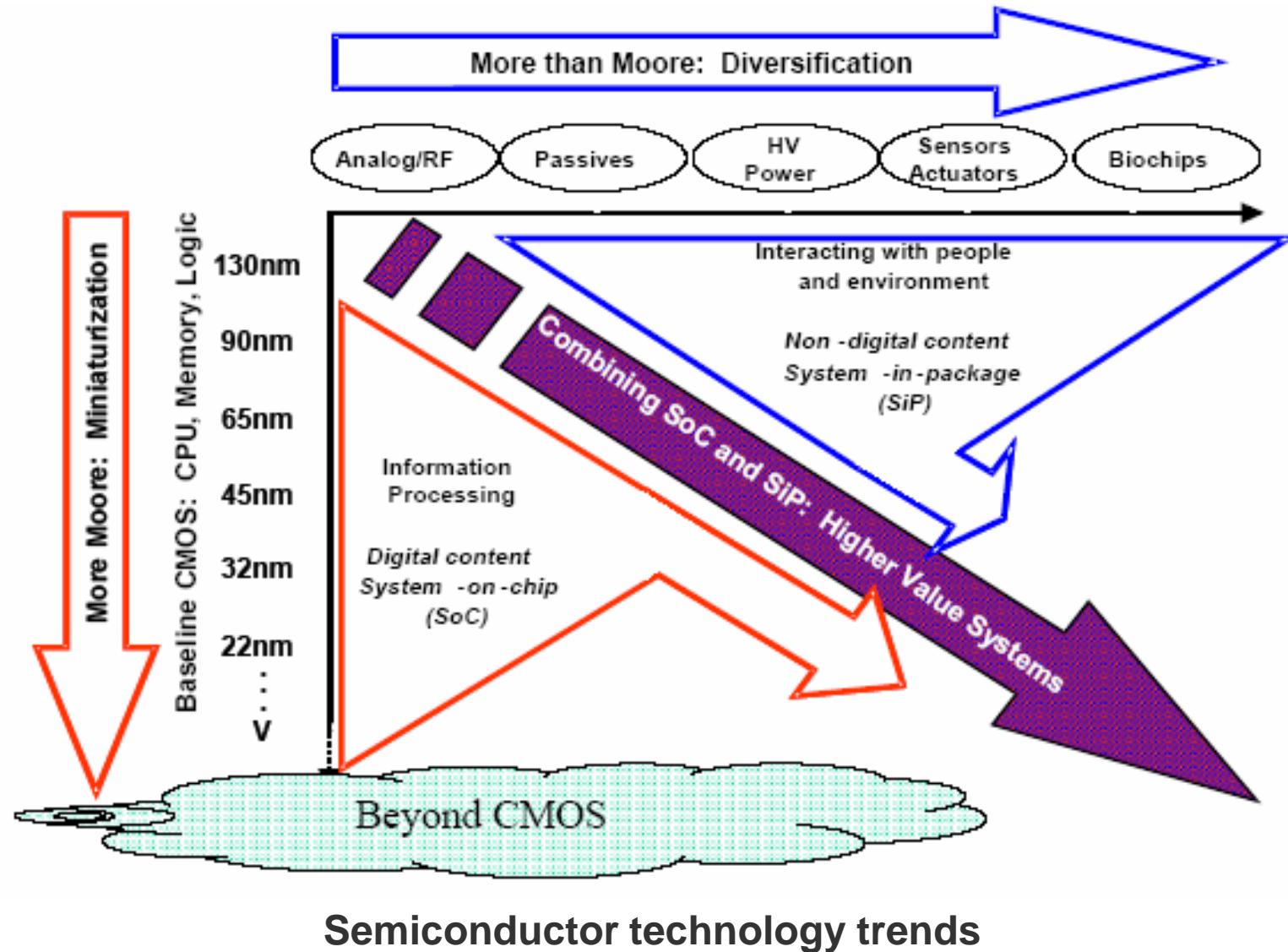
Perkembangan Eletktronika Organik



Pengalaman Riset Elektronika Organik [DSS] (miyazaki, 2011)

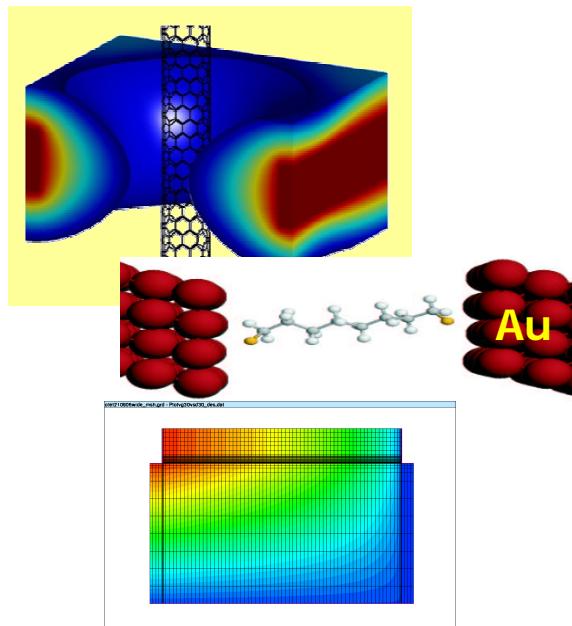


Roadmap Evolusi

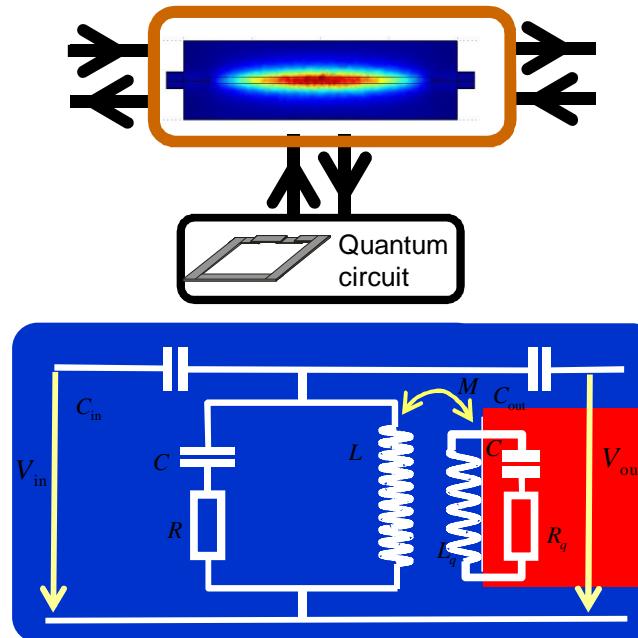


Multiscale approach for Nanoelectronics

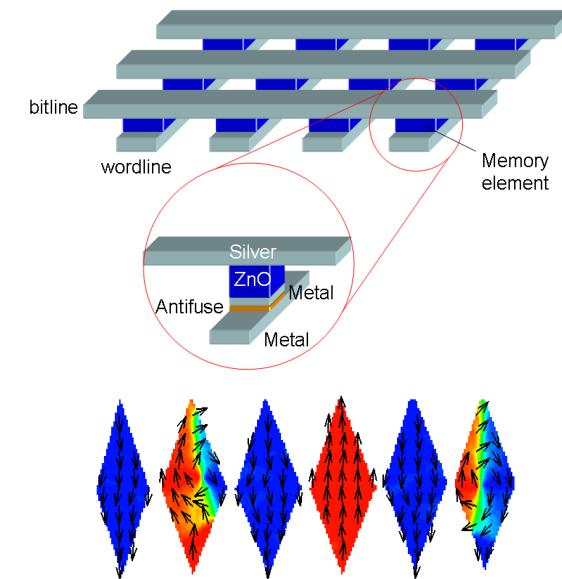
Device-level models



computerized



Architectures

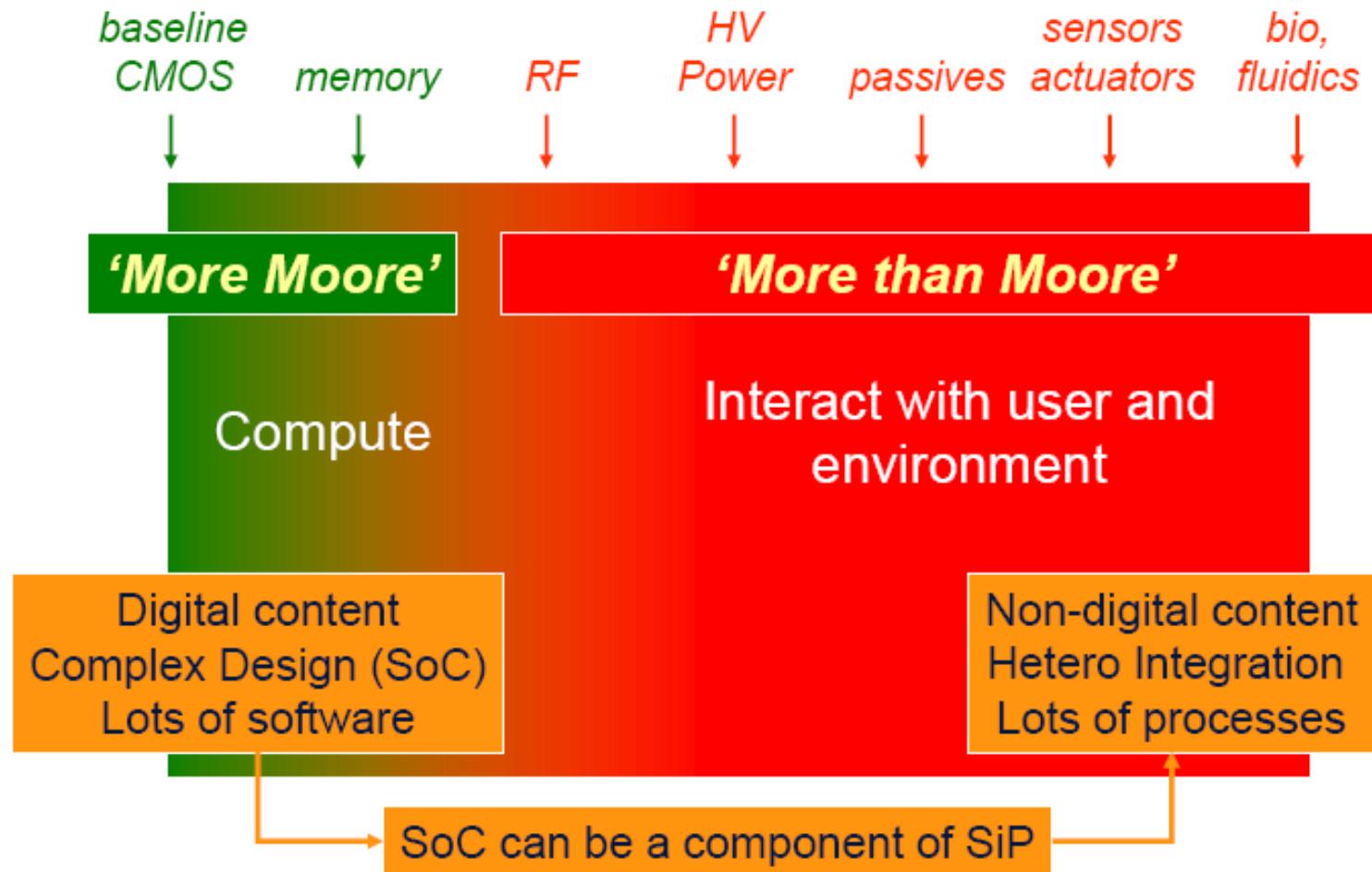


- Drift-Diffusion simulation for organic devices (TFTs, OLEDs, photodiodes, solar cells)
- Ab-initio modeling of single molecule diodes and CNTs
- Monte Carlo simulation of quantum devices

- DC circuit models for nanodevices
- Coupling quantum circuits to resonators
- Design of hysteretic devices
- Analysis of active matrix array for imagers

- Passive Crossbar non Volatile Memories
- Capacitive Memories
- Quantum Cellular Automata logic architectures

Cakupan dan Fungsi



Aplikasi Perkembangan



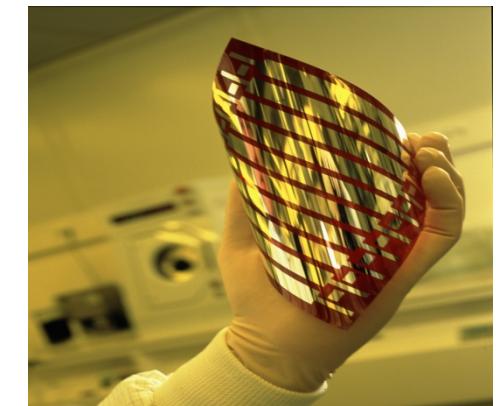
OLED Display
For Mp3-player



Example of organic sheet-image scanner



OLED TV from Sony



Inkjet-Printed solar cell from Konarka

Informasi

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Lecture

[#] Elektronika Organik (TKE4208)



Tujuan: Memberikan pemahaman mengenai perkembangan teknologi dan penggunaan komponen elektronika berbahan organik serta kemampuan untuk menganalisis komponen-komponen elektronika organik.

Pokok Bahasan: Steady-State Fotokonduktif dalam Bahan Organik; Model Temperatur Efektif untuk Medan Listrik; Deskripsi Aliran Muatan dalam Bahan Organik; Mobilitas dan Kecepatan Pengukuran dalam Organik; Potovoltaik Organik; Transistor Thin-film Organik; Field-Effect Transistor Organik; Optoelektronik Bio-Organic Menggunakan DNA; Field-Effect Transistor Organik untuk CMOS; Mekanisme Emisi dalam Light-Emitting Diodes Organik.

Referensi:

- Christof Wöll, Organic Electronics: Structural and Electronic Properties of OFETs. Weinheim: WILEY-VCH Verlag GmbH & Co. KGaA, 2009.
- Franky So, Organic electronics: Materials, Processing, Devices and Applications. New York: CRC Press Taylor & Francis Group, 2010.
- Ioannis Kymissis, Organic Field Effect Transistors: Theory, Fabrication and Characterization. New York: Springer Science + Business Media

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