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Long term research topics and vision of hybrid, flexible and printed electronics

‘Visions of ECS beyond 2030’ EPoSS workshop

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A working group within

Organic and Printed Electronics Association

Global, non profit, industry association for organic and printed electronics

Figures and Facts

- Founded in the year 2004
- **more than 200 international member companies & institutes from Europe**, America, Asia, and Africa
- www.oe-a.org
- Organic and printed electronics stands for a revolutionary new type of electronics – also called “emerging electronics” – which is thin, lightweight, flexible and robust

OE-A members represent the entire value chain of organic and printed electronics:

- Component & Material Suppliers
- Equipment & Tool Suppliers
- Device Manufacturers
- Producers/System Integrators
- End-Users
- Universities & R&D Institutes

A working group within VDMA

Image source: Schreiner

Printed Electronics Results are driven by the Industry

Key Industry Sectors:

Image source: Samsung, VTT, Ynvisible, OE-A, Heliatek

Printed Electronics Applications

Key Trends:

Image source: Messe München, VTT, Ynvisible, OE-A, Heliatek, Royole, IEE, CDT, OLEDWorks, RISE, Lyteus

Long term research topics and vision of hybrid, flexible and printed electronics beyond 2030 → in general ←

INDUSTRIAL COMPETITIVENESS

- Circular economy of flexible electronics
- Technology development for the production of green, sustainable, robust, lightweight, thin, flexible and stretchable electronic systems
- Product customization in mass production - Innovation of the series production with digital printing
- Comparison of manufacturing processes with regard to resource conservation & CO_2 emissions

Long term research topics and vision of hybrid, flexible and printed electronics beyond 2030
→ application driven ←

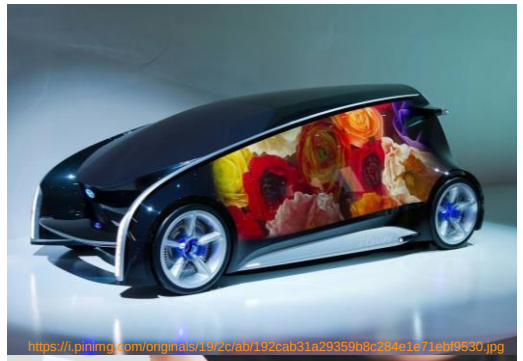
- **Printed flexible medical patches to detect body vital parameters, disease patterns and show aging rate**
- Printed flexible medical sensors
  - Self-monitoring for preventive care
  - Rehabilitation monitoring (bio-impedance/accelerometers)
  - Biomolecules monitoring
  - Wound monitoring
  - Cancer detection

Long term research topics and vision of hybrid, flexible and printed electronics beyond 2030
→ application driven ←

- **Printed flexible Q-dot and microLED**

  Examples:
  - for interior and exterior of autonomous driving cars
  - for smart buildings
  - for smart textiles, smart objects, …

- **Nearly all electronics could be flexible**
- **Seamless integration of printed hybrid electronics systems on top of any 3D object / 3D structural electronics**
- **Printed wireless communication Systems become a part of everything, hybrid printed electronic components for 6G, 7G**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https://www.inspire.ethz.ch/core/assets/files/1443/iot_1.jpg

Motivation / Core Message

Shaping the world of electronics together

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Thanks a lot for your attention

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