Participation in COST projects FP1104 and FP1405

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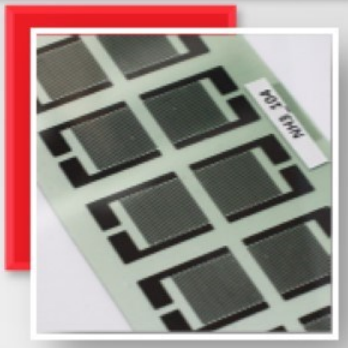
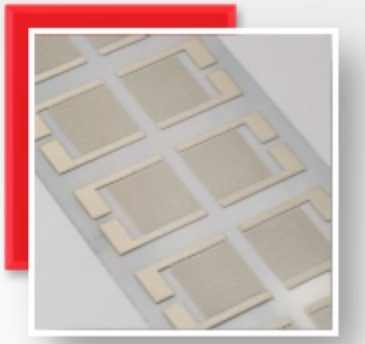
Program **Centra kompetence**

Program **Alfa**

Outline

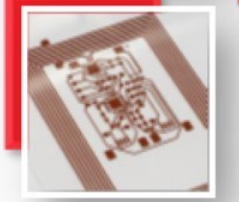
- Introduction, R&D activities
- COST FP 1104
- COST FP 1405
- Conclusion



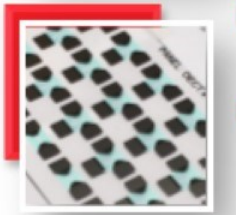


R&D activities

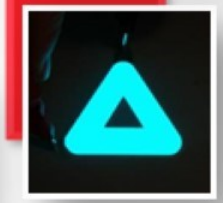
- **Simple functional layers**
  - Antistatic, Antimicrobial, Security Luminescent, Photochromic



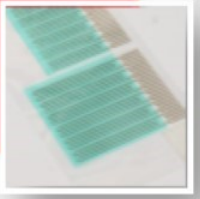
- **Passive components**
  - Resistors
  - Capacitors, Coils
  - Etc.



- **OECT, OFET**
- **Printed batteries**
  - Alkaline, Li-on



- **Sensors**
  - Temperature s.
  - Rel. humidity s.
  - Gas s.
  - Air/Gas flow s.
  - Acceleration s.
  - Tactile s.
  - Light s.



- **Display elements**
  - LEC, OLED
  - Electrochromic

- **Experiences**
  - R&D of Inks & printing/coating technology process
  - Upscaling, Lab2Fab experineces ind. Wide Web

- **Smart Labels**

With NFC communication over Android devices

- **Core Projects** - TE01020022 www.flexprint.cz

TA04010085 - Flexible autonomous energy harvesting systems for smart textiles

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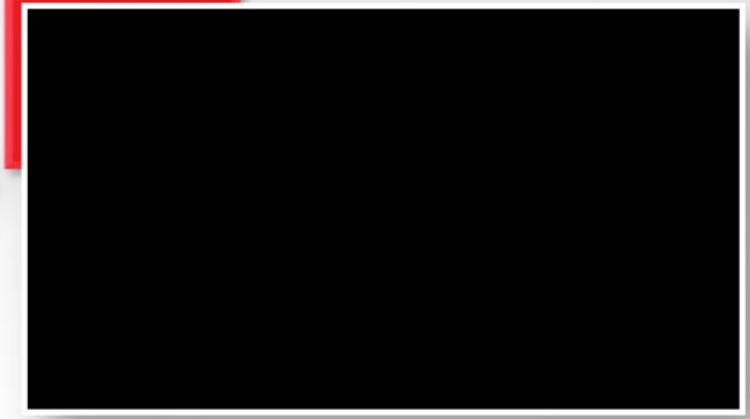
R&D activities, printing/coating techniques competency

- R&D of technology of preparation of functional structures
- R&D of ink formulation and benchmarking of comercial ink formulation
- Collaboration with industry – Printing Industry, Textile industry (inotex), automotive, Chemical industry, etc.

- Screen printing (Sheet fed, R2R)
- Flexo
- Gravure
- Pad printing
- Offset
- IJ

- Spin coating
- Dip coating
- Spiral bar coating
- Spray coating
- Zone casting



- Negative patterning – lasers – UV/VIS, NIR, IR

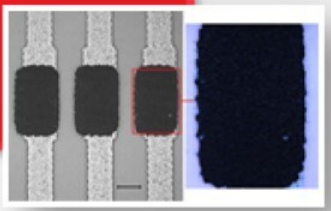
- Lab2Fab experiences
- Narrow web (410 mm), Wideweb production trials, pilot plant trials incl. high speed materiál printing (1.3 m, 320 m/min)

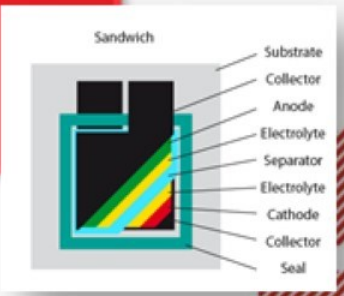
COST FP 1104

- **New possibilities for print media and packaging - combining print with digital**
- 2012 – 2015
- 36 member countries
- Chair of the Action: **Dr. A. SEISTO**
- MC member Czech Republic - **Doc. Michal Veselý**, **Dr. Markéta Držková**
- The goal of this Action is to promote discussion on the benefits that may be achieved from novel combinations of print and digital. It will also be used to enhance innovations that will make use of the benefits of both print and electronic media as well as innovations where print and electronic media are combined.

Benefits obtained from participation on COST FP 1104

- Collaboration with members:
  - Finland - Åbo Akademi University (prof. Martti Toivakka, Vinay Kumar)
    Fully printed biodegradable nanocellulose-based humidity sensor for SMART LABEL applications, Iarigai 2015
  - Greece - Technological Educational Institute of Athens (G. Kaltas)
    Screen-printed thermistors for flexible flow sensing applications, SCinTE 2015
  - Germany – HDM Stuttgart (prof. G. Hübner)
    Stage of preparation of cooperation in area of printed battery together with HDM and Varta





Benefits obtained from participation on COST FP 1104

- Collaboration with members:
  - Slovenia – National Institute of Chemistry (prof. M. K. Gunde)
    Optical, electrical and morphological study of PEDOT:PSS single layers spiral bar coated with various secondary doping solvents optimized for printed electronics

  - UK WCPC Swansea (prof. T. Claypole)
    Lectures at COST Summer School hosted by WCPC in 2014, 2015
    Overview – printed/coated functionalities
  - Participation on Paper Evolutions Exploring digital and physical paper futures, Helsinki 2015

COST FP 1405

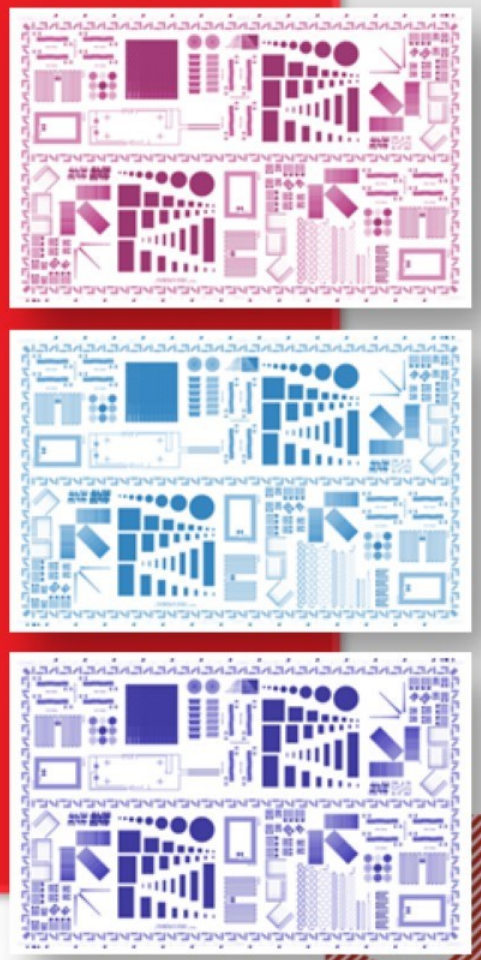
- **Active and intelligent fibre-based packaging - innovation and market introduction (ActInPak)**
- 2015 – 2019
- 36 member countries
- Chair of the Action: **Ms Sanne TIEKSTRA**
- MC member Czech Republic - **Doc. Michal Veselý**, **Dr. Tomáš Syrový**
- This Action aims to identify and focus on the key technical, social, economic and legislative factors relevant for a successful deployment of renewable fibre-based functional packaging solutions.
  This will be achieved by conducting research and development into active and intelligent packaging, encompassing both scientific and technical solutions, addressing the opportunities for, and obstacles to, market introduction.

Benefits obtained from participation on COST FP 1405

- Collaboration with members:
  - Starting dialogs with interesting international companies and universities which are participating on FP 1405 action

Conclusion

- Very good opportunity to establishing new collaborations from industrial and academic partners from a broad.
- Interchange of researchers and students.
- In future - creation of consortium with ability to submit H2020 project
- Spreading R&D activities and its outputs to other countries



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Thank you for your attention

Acknowledgments

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