D2.8 Educational videos

WP2 NA1 – Supporting Starting Infrastructure Community (Newcomers)

The EMERGE project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement Nº 101008701

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List of abbreviations

ALMA – AlmaScience
FZJ-HPG – Forschungszentrum Jülich GmbH
JOR – Joanneum Research Forschungsgesellschaft mbH
RISE – Research Institutes of Sweden AB
R2R – Roll-to-roll
TA – Transnational activity
TUD-IAPP – Technische Universität Dresden / Dresden Integrated Centre for Applied Physics and Photonic Materials
TUD-FM – Technische Universität Dresden / Molecular Functional Material
UNOVA – Instituto de Desenvolvimento de Novas Tecnologías
UV – Ultra-violet
WUT – Warsaw University of Technology / Centre for Advanced Materials and Technologies

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1. Executive Summary

Deliverable D2.8 is part of WP2 - NA1 – Supporting Starting Infrastructure Community (Newcomers) and is related to the *Subtask 2.4.2 - Increase number of trained European researchers and technologists by assembling specialised courses* (part of Task 2.4- Training and mobility programm).

The sub-task aims to enhance the scientific and technical knowledge of researchers working on conventional electronics and photonics who wish to develop new skills in novel technologies and their emerging applications that can be provided with training through secondments, virtual seminars, or educational videos. The deliverable D2.8 - Educational videos, compiles the educational videos prepared for this purpose until M24. Until the end of the project, the consortium will generate more educational videos that will become available on the EMERGE website. The videos are not yet available to the public in general, but a direct link will be provided for consultation.

2. Purpose and scope

As mentioned beforehand, this task aims to provide technical training in Advanced Technologies, covering aspects starting from the materials, their application, devices and systems processing, bringing benefits and knowledge to researchers from different European institutes.

These videos will provide a general overview of design and simulation, production techniques and characterisation tools that cover the entire value chain envisioned by the EMERGE project. In this regard, eight videos were prepared for training and educational purposes, which will be listed in the following.

Other videos are being planned, and some are expected to be concluded by the end of 2023. Nevertheless, whenever possible, the partners will prepare relevant videos that could be used for training purposes and advertise the existing knowledge and facilities. At the moment, AlmaScience is preparing a video related to paper production that goes from the wood, cooking, pulp refining, sheet formation, pressing, drying and characterisation. UNOVA is working on the scripts for some videos that could cover relevant printing/deposition techniques, focusing on the difference between lab scale and pilot/industrial scale, synthesis of nanostructures (microwave synthesis, laser, combustion,

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e.g.) and generic for device manufacturing (such as transistors, sensors, solar cells, supercapacitors).

2.1. Educational videos prepared until M24

RISE has prepared a series of animated videos from techniques offered by this infrastructure and available for the EMERGE users.

The videos prepared are aligned with the prototype fabrication (transnational access activity 3), including:

2.1.1. Laser cutting

Description: Equipment typically used to cut or engrave materials such as wood, metal, and polymer.

Tool available at RISE

TA involved: *TA3.1 – Device preparation* activities.

Link for the video here

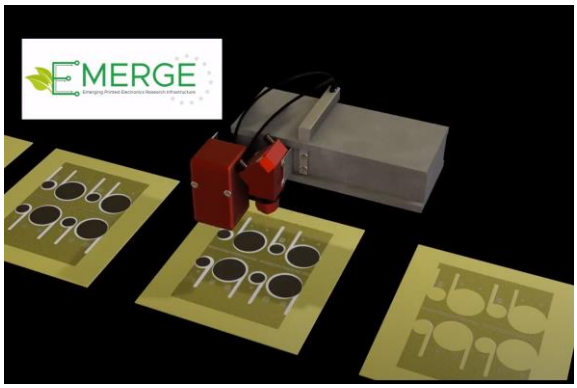

Figure 1 - Screenshot of the laser cutting video.

2.1.2. Screen printing

Description: (manual or semiautomatic) equipment for deposition of thick films on flexible substrates, using commercial pastes and custom formulations.

Tool available at ALMA, RISE, TUD, and JOR.

TA involved: *TA3.2 – Functional 2D & 3D printing* and *TA3.3 – Industrial printing* activities.

Link for the videos here and here.

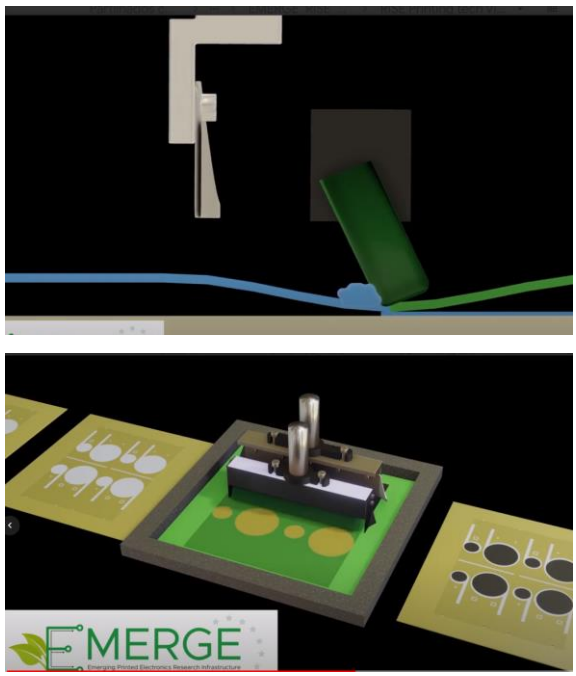

Figure 2 - Screenshots of the screen-printing videos.

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2.1.3. Inkjet printing

Description: An inkjet printer allows printing small prototype devices with process control and a wide array of settings, which can be adjusted to match each application.

Tool available at ALMA, RISE, and JOR.

TA involved: *TA3.2 – Functional 2D & 3D printing* and *TA3.3 – Industrial printing* activities.

Link for the videos here and here.

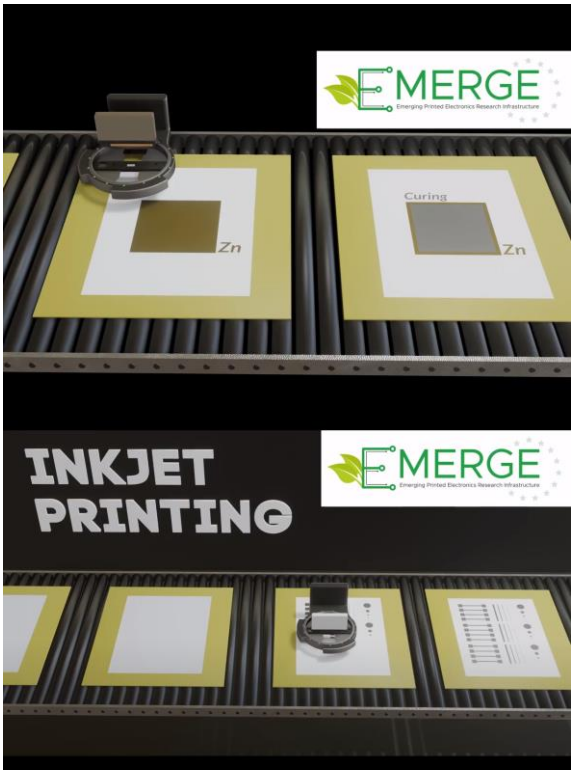

Figure 3 - Screenshots of the inkjet videos.

2.1.4. Aerosol jet printing

Description: enables printing of functional inks on both 2D and 3D substrates. It supports a wide range of functional inks, which can be deposited on various substrates in a single or multi-layer approach.

Tool available at RISE, JOR, and WUT.

TA involved: *TA3.3 – Industrial printing* activities.

Link for the videos here and here.

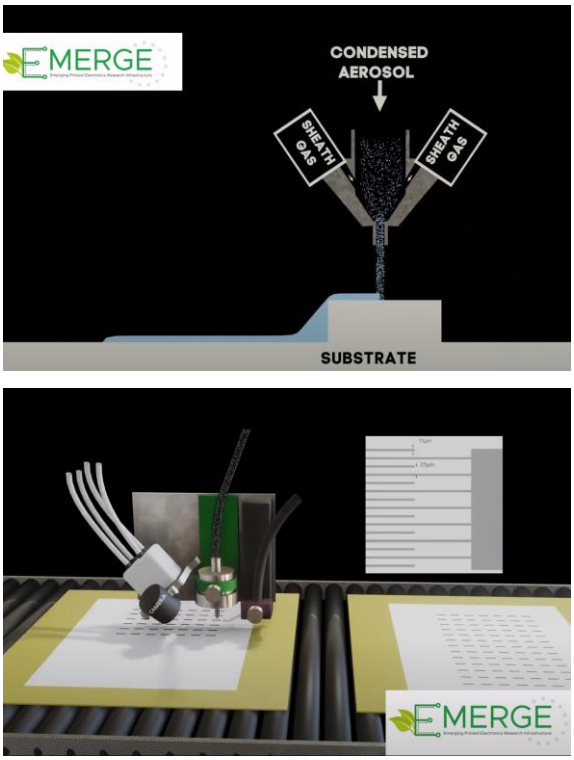

Figure 4 - Screenshots of the aerosol jet videos.

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2.1.5. 3D printing

Description: direct-printing dispenser capable of deposit numerous materials, including store-bought or home-made filaments, clays, pastes, hydrogels, photo-initiators, and cementitious materials.

Tool available at RISE, TUD and WUT.

TA involved: *TA3.2 – Functional 2D & 3D printing* and *TA3.3 – Industrial printing* activities.

Link for the videos here.

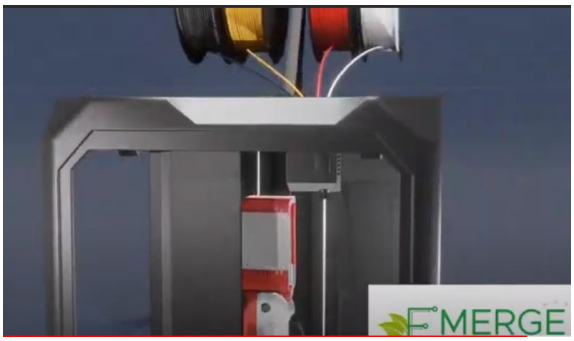

Figure 5 - Screenshots of the 3D printing video.

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