

AT A GLANCE

Project Acronym: BASMATI

Project No: 646159

Project title: Bringing innovAtion by Scaling up nanoMAterials and Inks for printing

Duration: 36 months

Call identifier: H2020-NMP-PILOTS-2014

Topic: NMP-05-2014 Industrial-scale production of nanomaterials for printing applications

THE PROJECT

BASMATI addresses the development of active nanomaterials and their formulation in conductive and electrochemical inks for screen and inkjet printing. As a case study, these functional inks will be used in a printed thin film battery. BASMATI's general objective is to develop pilot lines for ink formulation, ensuring large volume fabrication of new products with improved properties for printing. Furthermore, the project investigates new sources of nanomaterials for conductive and electrochemical inks. Nanosafety issues concerning these new active materials are carefully considered in BASMATI.

With the knowledge levels reached by research groups and the transfer to pilot lines by SMEs and industrial partners, BASMATI will pave the way for the industrial production of functional inks for mass applications such as printed electronics.



This project has received funding from the European Union's HORIZON 2020 research and innovation programme under grant agreement No 646159



CONTACT

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Basmati

Bringing Innovation by
Scaling Up Nanomaterials
and Inks for Printing

www.basmati-project.com



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CONSORTIUM



UMICORE, BELGIUM



COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES (CEA), FRANCE



LEITAT TECHNOLOGICAL CENTER, SPAIN



BELIFE, BELGIUM



MICRODROP TECHNOLOGIES GMBH, GERMANY



GENES' INK, FRANCE



GWENT ELECTRONIC MATERIALS LIMITED, UK



JSR MICRO NV, BELGIUM



VARTA MICROBATTERY GMBH, GERMANY



ARISTOTELEIO PANEPISTIMIO THESSALONIKIS - LAB FOR THIN FILMS-NANOBIO MATERIALS, NANOSYSTEMS & NANOMETROLOGY, GREECE

OBJECTIVES

The aim of BASMATI is the development of large volume production processes for functional inks, such as:

- Conductive inks based on metallic and graphene nanoparticles for printed electronics devices.
- Electrochemical inks, as cathode in printed batteries.

BASMATI will deliver pilot lines for low cost inks dedicated to printed electronics. Special attention will be paid to the development and application of appropriate nanosafety guidelines.

CHALLENGES

- Control of nanoparticle sizes, size distribution and shape
- Tailored rheological and morphological properties
- Substrate compatibility
- High throughput compatibility
- Inkjet and screen printing compatibility
- Compatibility with nanosafety guidelines



IMPACT

The project will overcome technological and economic barriers inherent to the availability of inks for printed electronics:

- Low cost Cu and Al conductive inks: reduction of 50% compared with current silver based inks.
- High Availability: production of relevant quantities of electrochemical and conductive inks.
- Compatibility with HD printing: inks for high throughput and high resolution printing technologies.
- Nanosafety guidance will be carefully applied at all steps of nanoparticles synthesis and introduction in formulations.
- Ink formulations involving water based and non-toxic solvents.

The project covers two kind of nanomaterials inks:

- Conductive inks (Cu, Al) will be suitable as a low cost alternative to silver for a large range of applications (RFID, photovoltaic, sensors, vehicles, smart packages).
- Electrochemical inks will be targeting printed energy storage applications (printed electrode, thin-film battery).

