



EC H2020 M3DLoC Project
Project No. 760662

End of Project Open Day Dissemination Workshop
M54

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Deliverable D8.7

Cambridge Nanomaterials Technology Ltd (CNAT)

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Deliverable 8.7 Document History

Document history			
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V1.2	30/06/2022	Mónica Spreadbury & Dr Bojan Boskovic	Preparation of the final version and approval

List of Abbreviations

CNAT	Cambridge Nanomaterials Technology Ltd.
NTUA	National Technical University of Athens
LTCP	Lavrion Technological & Cultural Park



Summary

This deliverable D8.7 End of Project Open Day Dissemination Workshop, describes all the activities conducted by Cambridge Nanomaterials Technology Ltd (CNAT) and the National Technical University of Athens (NTUA), in order to organise the final Open Day for the M3DLoC Project.

The aim of the final Open Day was to disseminate the results of the M3DLoC project, present the pilot line and discuss exciting new developments in the project and in the field of microfluidic biomedical devices, development of 3D printing equipment and use of nanomaterials such as graphene for 3D printing applications.

1. Introduction

CNAT has been responsible for organising the two Open Days for the Project. The **1st Open Day Workshop** event was held on the **23rd January 2020** (following the M24 Project meeting on the 22nd January at the European Commission), in Brussels, at the Crowne Plaza Hotel, Rue Gineste 3, 1210 Brussels, Belgium.

Participants of the M3DLoC Open Day 2020 Workshop and Exhibition were senior members coming from leading bio-medical and healthcare organisations such as: **GSK, GE Healthcare (Whatman), Viscofan BioEngineering, Fluigent, Keralty, Prysmian Group, AmpaSHIELD, V and enablingMNT / Microfluidic Association**, among others. Fluigent is coordinator of the **HoliFAB** project with a similar aim and the meeting was an opportunity for discussion of project clustering. More details of this workshop can be found in the **Deliverable D8.5 Open Day Dissemination Workshop** document, which describes all activities and materials that were prepared and carried out in advance and during the Open Day, as well as a summary of the event itself.



Figure 1 M3DLoC Open Day 2020 - Exhibition



Altratech Booth at the M3DLoC Open-day 2020 EXPO. Tim Cummins, CTO, demonstrates Altratech’s BeadCAP DNA/RNA detection sensor to attendees from GSK, GE-Healthcare and others. M3DLoC and H2020 EXPO days are an important means of connecting biotech startups such as Altratech with large-multinational pharma and healthcare companies, and seeding strategic partnerships to accelerate novel technologies to the market.

The final Open Day took place on the **24 June 2022** as a hybrid event at **Lavrion Technological & Cultural Park** (Attica), Greece and online. This event had **51 people** registered to attend, external participants, coming from the following organisations: *AnotherBrain, University of the Aegean/Nanoplasmas PC, Helmholtz Centre for Infection Research, BSRC "Alexander Fleming", ANODYNE NANOTECH and FORTH/IESL.* The event was widely publicised on LinkedIn and other social media.



Figure 2 2nd Open Day participating organisations logos

Prof. Costas A. Charitidis from **NTUA** and Dr Bojan Boskovic from **CNAT**, were responsible for hosting and coordinating the meeting, welcoming delegates, chairing the presentations and discussions and facilitating interactions between external participants and project partners. Participants at the event had the opportunity to visit the **M3DLoC** pilot line. NTUA prepared a video on the pilot line which was shown on the day. CNAT prepared a video for the project with some animations, which is in the project website.

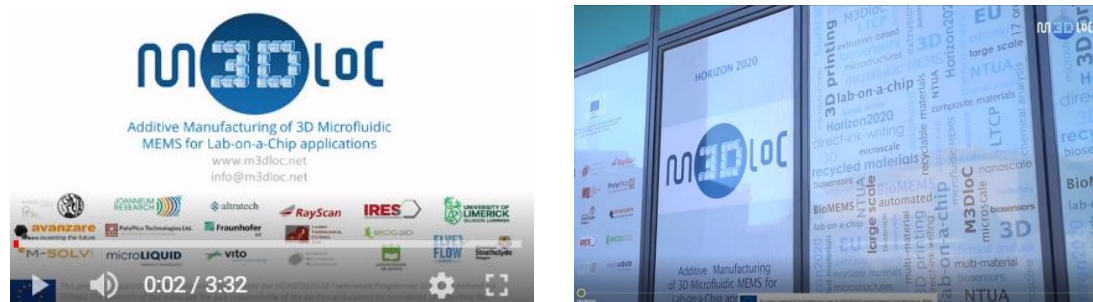


Figure 3 Screenshots of the project video and pilot line video



Prior to the event, CNAT prepared for all M3DLoC Partners individual virtual exhibition booths, in order to boost their dissemination and exploitation results. This virtual exhibition website (www.medlocexpo.net) was accessible from the EXPO section on the M3DLoC Project website: www.m3dloc.eu/EXPO.

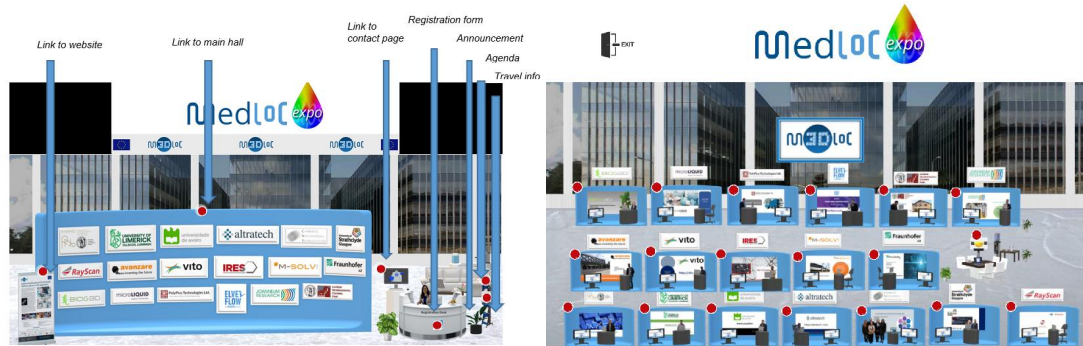


Figure 4 M3DLoC virtual EXPO

2. Organisation of the event

The planning and organisation of the M3DLoC Project Open Day Workshop and Exhibition started with a meeting between NTUA (Project Coordinator) and CNAT to discuss about the venue and possible dates for the Open Day. The final date was agreed after receiving feedback from M3DLoC Partners to a Doodle Poll sent by NTUA.

M3DLoC Partners were informed by the Project Coordinator, on the dates for the Open Day and Progress and Review meetings, as well as the venue, Lavrion Technological & Cultural Park. NTUA drafted the agenda and organised the logistics (information on hotels and arrange transport, etc.), while CNAT prepared an announcement which was published on the project website, EXPO site and social media accounts. A registration of interest was also uploaded to both websites, where all information was updated regularly.



Figure 5 M3DLoC Open Day 2022 announcement and registration of interest



Two different registrations forms were prepared by CNAT, one for partners asking information on the presentations (if given), and another one for external delegates. The information collected on these forms contributed to prepare a comprehensive document to give to participating attending the event.

Figure 6 Registration forms

NTUA drafted the agenda for the meeting. CNAT was in charge of the preparation a full document with the abstract of the talks, and information on speakers, delegates and participating organisations, which was given to participants who registered to the Open Day and sent to all partners. This document was published on the project website and EXPO site.

Figure 7 Preliminary Agenda



The final agenda which included information on delegates, was sent only to partners and those attending the meeting, in order to facilitate networking during the meeting.

M3DLoC Project Open Day 2022
Agenda Speakers, Delegates & Participating Organisations
 Date: 24 June 2022
 Time: 09:00 – 18:30 (CET)
 Venue: Lavrion Technological & Cultural Park
 1 Athens-Lavrion Avenue
 GR19000, Lavrion, Greece

This project is supported by the European Union under the Horizon2020 Framework Programme Grant Agreement no. 768842

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M3DLoC Project

The M3DLoC area is the environment of multi-material 3D printing technologies for the topographic production of multi-material M3DLoC 3D on-chip and array applications. The project is based on the integration of mechanical design, 3D printing and microfluidic based 3D printing (M3DLoC) in order to fabricate microfluidic devices with the ability to perform an array of chemical reactions in an automated format.

The functionality of these devices is evaluated based on their ability to perform an array of chemical reactions. The devices are designed and fabricated using a multi-material 3D printing process. The devices are designed and fabricated using a multi-material 3D printing process. The devices are designed and fabricated using a multi-material 3D printing process.

M3DLoC Open Day 2022 Agenda

18:00 Welcome and Opening of the M3DLoC Open Day
 Prof. Costas A. Charalambides, National Technical University of Athens (NTUA), Greece - M3DLoC Project Coordinator
 Dr. Roger Bredbeck, Managing Director, Cambridge Nanotechnology Technology Ltd (UK), M3DLoC European and Dissemination Management and Open Day 2022 Coordinator

18:30 Prof. Costas A. Charalambides and Dr. Roger Bredbeck, NTUA, Greece - M3DLoC Project Coordinator and Open Day 2022 Coordinator
 Title: M3DLoC Overview and Impact
 Presentation Session - M3DLoC pilot line materials, processes and metrology systems

Dissemination and Networking Session & Closing

18:30 Closing of the Open Day 2022

M3DLoC Open Day 2022 – Speakers

Prof. Costas A. Charalambides (M3DLoC Project Coordinator & Organizer)
 Director of Research Engineering NTUA
 National Technical University of Athens, Greece

Dr. Roger Bredbeck (M3DLoC Project Coordinator & Organizer)
 Managing Director
 Cambridge Nanotechnology Technology Ltd, UK

Dr. Stephen Barley (M3DLoC Partner & Organizer)
 Managing Director
 PolyPlus Technology Ltd, UK

Dr. Markus Bärnacka (M3DLoC Partner & Organizer)
 Managing Director
 ERMACOM, Austria

Dr. Robert Bredbeck (M3DLoC Partner & Organizer)
 Managing Director
 Cambridge Nanotechnology Technology Ltd, UK

Dr. Hailong Chang (M3DLoC Partner & Organizer)
 Managing Director
 University of Cambridge, UK

Dr. Hailong Chang (M3DLoC Partner & Organizer)
 Managing Director
 University of Cambridge, UK

Dr. Hailong Chang (M3DLoC Partner & Organizer)
 Managing Director
 University of Cambridge, UK



Figure 8 Screenshots of the final document agenda

The Open Day was publicised on the project social media (twitter and LinkedIn accounts). An event was created in LinkedIn. Many partners also publicise the event on their websites and social media.



Figure 9 Announcement in Twitter



M3DLoC PROJECT OPEN DAY 2022

Hybrid event on Friday, 24th June

M3DLoC PROJECT OPEN DAY 2022
Event by Dr Jelena Aleksic

📅 Fri, Jun 24, 2022, 7:00 AM - 2:00 PM (your local time) Add to calendar ▾

📍 Lavrion Technological and Cultural Park, Λαυρίου 1, Περιστέρα, Αττική, GR, 12132
<https://www.medloexpo.net/>

🔗 Event link · <https://www.m3dloc.net/workshops/>

👤 Elias Koumoulos and 29 other attendees

Invite Share ...

Figure 10 Event created on LinkedIn

Assimakis Chadoumelis • 1st
Site Manager @Lavrion Technological and Cultural Park
2w • 🌐

Lavrion Technological Cultural Park hosts the M3DLoC PROJECT OPEN DAY 2022. The new fully automated #pilot-line for the production of #labonachip #diagnostics. Would you like to attend?

Dr Jelena Aleksic • 1st
Head of Innovation Strategy at Cambridge Nanomaterials Technology Ltd
3w • 🌐

#microfluidics #3dprinting #diagnostics #h2020 #workshop #labonchip

M3DLoC PROJECT OPEN DAY 2022

Hybrid event on Friday, 24th June

Fri, Jun 24, 7:00 AM - 2:00 PM BST

M3DLoC PROJECT OPEN DAY 2022
Perisτέρα, GR

Bojan Boskovic, Ana Bankovic Cassidy and 56 other attendees

View event

LAVRION TECHNOLOGICAL CULTURAL PARK
LTCP • TECHNOLOGY • RESEARCH • CULTURE

M3DLoC Open Day Workshop

© 3 June 2022

The M3DLoC Project (Additive Manufacturing of 3D Microfluidic MEMS for Lab-on-a-Chip applications) is delighted to announce their final Open Day Workshop related to exploitation and dissemination of the project results. The M3DLoC Open Day will be taking place as a hybrid meeting on:
Date: Friday, 24th June 2022
Location: Lavrion Technological & Cultural Park (Attica), Greece & online

M3DLoC
Additive Manufacturing of 3D Microfluidic MEMS for Lab-on-a-Chip applications

The M3DLoC Project (Additive Manufacturing of 3D Microfluidic MEMS for Lab-on-a-Chip applications) is delighted to announce their final Open Day Workshop related to exploitation and dissemination of the project results. The M3DLoC Open Day will be taking place as a hybrid meeting on:
Date: Friday, 24th June 2022
Location: Lavrion Technological & Cultural Park (Attica), Greece & online

Important: In the event of the last agreement in respect of you are invited to participate in the event on 24th June 2022.

www.m3dloc.eu

Figure 11 Samples of partners' posts



CNAT prepared a travel document with the input from NTUA. This document was sent to those who registered to the event and it was also available to download from the workshops page in the M3DLoC website and the EXPO website (reception area).



Figure 12 Travel information document

CNAT prepared a virtual exhibition prior to the event, with the aim to provide to M3DLoC partners of a space to showcase their products and services and help booting their exploitation activities. This virtual exhibition (EXPO) was available to be accessed from the project website www.m3dloc.eu/EXPO (more details in the section below)

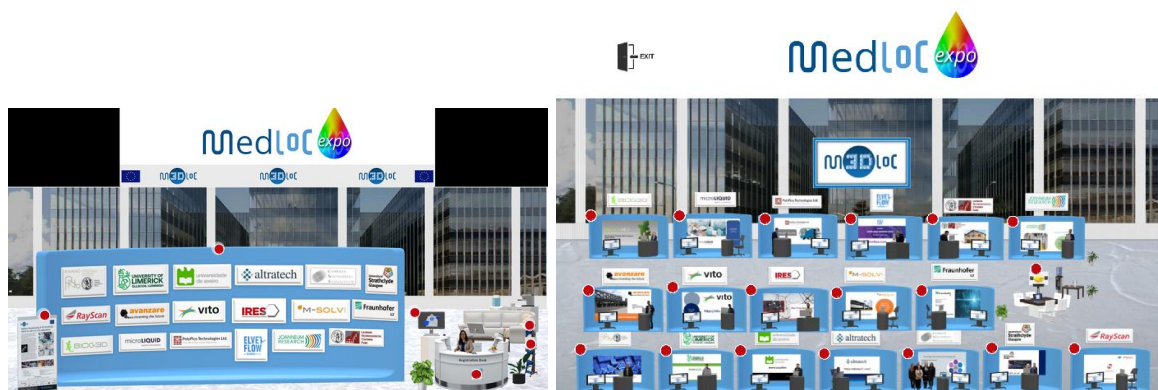


Figure 13 Screenshots of the M3DLoCexpo Reception and Main Hall



2.1 Agenda M3DLoC Open Day 2022

Welcome Open Day

09:00 Welcome and Opening of the M3DLoC Open Day

Prof. Costas A. Charitidis, National Technical University of Athens (NTUA), Greece
- M3DLoC Project Coordinator,

Dr Bojan Boskovic, Managing Director, Cambridge Nanomaterials Technology Ltd (CNT), UK
M3DLoC Exploitation and Dissemination Management and Open Day 2022 Co-organiser

09:05 **Prof. Costas A. Charitidis and Dimitris Fantanas**, NTUA, Greece - M3DLoC Project Coordination and Open Day 2022 Co-organisers

Title: M3DLoC Overview and Impact

Presentation Session - M3DLoC pilot line materials, processes and metrology systems

09:15 **Eleni Gkartzou**, National Technical University of Athens -NTUA, Greece

Title: Fused Filament Fabrication (FFF) materials and process for microfluidic applications

The need for accessible and inexpensive microfluidic and Point-of-Care devices requires new manufacturing methods and materials, as a replacement for traditional soft lithography and polydimethylsiloxane (PDMS). Fused Filament Fabrication (FFF) is a versatile manufacturing technology, compatible with a wide range of thermoplastic polymers. This versatility can be exploited for pilot testing of new polymer formulations as matrices with incorporated (nano)additives, as an efficient and cost-effective way of producing new materials with tailored properties for Lab-on-Chip systems and biomedical applications. This presentation will provide an overview of material and FFF process development methodology developed within M3DLoC project, as part of M3DLoC Pilot Line.

09:30 **Dr Wenlong Chang**, University of Strathclyde, UK

Title: Nanosecond laser micro-structuring of epoxy painting surfaces adhering to an aluminum alloy



Paint materials and their thickness on the airframe affect the weight and protection of aircraft. Epoxy is one of the most popular painting materials which is widely used in the aviation industry. This material has a high resistance to chemicals, less color fading, lower oxidize, does not break down easily, and adheres well on Aluminum alloy. Avoiding icing problems different flight altitudes or in high latitude countries is becoming essential. In this study, a series of micro pattern structures on Epoxy painting surfaces was machined using high precision nanosecond laser machining. These micro pattern structures can result in smooth superhydrophobic paint surfaces. The superhydrophobic surface can improve the anti-ice, anti-fog, self-clean and reduced water adhesion properties of the finished surface. The optimal parameters for superhydrophobic surface on Epoxy material have been found to be laser power 2W, frequency 100 kHz, pitch 10 um and spot size 15 um. Icing experiments have been conducted to establish the delays of freezing time. The results show that the best superhydrophobic surface extends freezing time by 28% compared with normal epoxy painting surfaces without any structures.

09:45 Karsten Braun, M. Sc. Fraunhofer Institute for Laser Technology ILT, Germany

Title: Laser processing – Laser ablation, structuring and surface polishing

Process principles, processing strategies and results within the M3dLoC project will be presented. Also, machine setups of the laser processing modules of the M3dLoC pilot line will be explained and a short outlook for further works will be given.

10:00 Stephen Reilly, PolyPico Technologies Ltd, Ireland

Title: Multi-Channel Multi-Materials non-contact print system

One of the many novel innovations resulting from the M3DLoC project is the development of a novel print system. The printer can print 8 different materials at a time and uses disposable dispensing cartridges, which completely avoid potential cross-contamination issues. A diverse range of materials such as DNA probes, conductive inks, adhesives and other reagents can be automatically loaded into the print head and printed with precision in the picolitre volume range.

10:15 *Coffee Break*

Visit partners virtual exhibition booths: www.medlocexpo.net

10:30 Dr Elvira Villaro Ábalos, Avanzare, Spain

Title: Carbon-based inks and formulations for functional coatings via inkjet deposition



Several formulations have been developed and tested regarding M3DLoC project aiming to obtain a functional ink with adequate electrochemical response to act as electrode in devices.

This ink is deposited by inkjet printing system, and it is a key feature that is stable ink without agglomeration which could collapse the feeding. For aiming this objective, it has been selected graphene materials with appropriate lateral size and it has been dispersed by specific protocols in water-based medias. We will show the performance of the carbon inks and the applications they have.

10:45 Dr Alexander Tselev, Universidade de Aveiro, Portugal

Title: Hybrid scanning microscope utilizing an optical confocal sensor and near-field microwave probe

A scanning probe microscope will be presented. The microscope utilizes optical confocal distance sensor and near-fields of microwaves to probe and image samples and parts under test. The main foreseen use of the microscope is high-spatial-resolution inspection of parts with varying surface shape and/or electrical properties (dielectric constant and conductivity). The lateral spatial resolution of the microwave near-field probing of the tool has been demonstrated to be less than 1 μm , which is better than $>2 \mu\text{m}$ of far-field optical imaging systems currently employed for the same purpose in industrial processes. A key issue in a number of micro- and nanometer-scale manufacturing processes is the lack of high-spatial-resolution quality control methods to check and reject defective parts before use. These may include, as examples, fabrication of microfluidic components or micro-electro-mechanical systems as well as certain processes and technological steps in semiconductor and electronics industries. The near-field microwave probing is a test solution, which allows high-resolution control measurements to identify defective parts. The tool can be used for in-line and off-line inspection of part (sample) topography and geometry of topographic features, such as channels, depressions, protrusions in microfluidic systems and micro-electro-mechanical systems (MEMS). Due to the ability of microwaves to penetrate through dielectric materials, the microscope can be implemented for imaging of buried structures, for example, metal lines or voids in a dielectric material (the first case is common in interconnect and packaging solutions in electronics), which can find applications in non-destructive failure analysis of semiconductor device packaging.

11:00 Philipp Jatzlau, RayScan Technologies GmbH, Germany

Title: Development of an X-ray radiography and laminography system for in-line inspection

For in-line characterisation, testing, measuring and monitoring of the AM system, an X-ray radiography system was developed. The system consists of a high-resolution X-ray source providing very small focal spots and a high-resolution X-ray. In combination with a high precision object manipulator and a super-resolution algorithm platform, it is possible to capture high-resolution X-ray projection images. Several images taken



from different angles allow the reconstruction of sectional images parallel to the sample surface.

11:15 Dr George Papazetis and Tzimas Evangelos, MTL-NTUA, Greece

Title: Pilot Line and system integration

All production line environments are complex multi-module systems, commonly requiring system integration tasks. This involves a complex hardware and software review of the systems and the requirements for production. Based on M3DLoC project requirements, the design and development for the system controller software and the automated transport system, enabled the integration of the individual workstations into a prototype pilot line for the production of bio-MEMS.

Bio-MEMS have to go through a sequence of manufacturing steps as defined in production recipes. The system controller is the dedicated software that performs the scheduling of tasks and the status monitoring for the transport system and the workstations based on the production recipes. The transport system acts as the link between the various workstations, transferring semi-finished products from one manufacturing stage to the next. Each workstation expects instructions from the system controller software to perform manufacturing operations in a fully automated mode.

11:30 Coffee Break

Visit partners virtual exhibition booths: www.medlocexpo.net

Demonstration Session

M3DLoC and LTCP facilities

Sessions will take place in groups and will run in parallel

12:00 M3DLoC Pilot Line Demonstration - NTUA

LTCP facilities and history - LTCP

13:00 Lunch break

Visiting of the partners exhibition booths and networking (in person and virtually)

Partners virtual exhibition booths: www.medlocexpo.net

Presentation Sessions: M3DLoC Microfluidics

14:00 Dr Marlene Kopf, ELVESYS SAS, France

Title: Elvesys – Microfluidics Innovation Center



Elvesys is an innovative company that aims to enable cutting-edge discoveries and state-of-the-art research for scientists around the world with its world-class microfluidic instruments. The company's focus is on pressure-controlled microfluidics and related elements that open up far-reaching possibilities for semi-automated handling of tiny volumes of fluids in many fields of research.

14:15 Dr Ikerne Etxebarria, MicroLiquid, Spain

Title: Top 3 Medical devices CDMO

E connectivity's IVD solutions team, shortest path to market. We are the partner of choice to Life Science OEMs for the design, clinical validation and manufacturing of microfluidic devices, enabling rapid diagnosis and novel treatments resulting in healthier lives.

M3DLoC Detection Techniques

14:30 Mike Szymonik, VITO, Belgium

Title: Detection technologies for DNA mutations – from microarrays to lab-on-chip

The detection of DNA mutations is a critical aspect of molecular diagnostics, from infectious disease to somatic mutations in cancer. We present an a comparison of the main reference techniques that have been commonly applied in clinical practice – from DNA microarrays, qPCR techniques and NGS. We then explore the use of novel approaches towards the development of cheaper, more rapid point-of-care diagnostic devices, including use of isothermal amplification technologies and integrated lab-on-chip readout systems. We demonstrate how rapid prototyping capabilities aid the development of novel biosensor devices. We showcase the techniques discussed with data from clinically-relevant samples.

14:45 Tim Cummins, CTO, AltraTech Limited, Ireland

Title: BeadCAP-based detection

- Introduction to Altratech Ltd and its role in M3DLoC.
- ALTRA's novel PNA-BeadCAP assay for viral RNA detection
- HIV & COVID-19 SARS-CoV-2 test cases overview
- Bead-capacitance detection method, with CMOS semiconductor electrodes
- Bead-capacitance detection method, with M3DLoC electrodes
- Detection results to date, CMOS & M3DLoC electrodes



M3DLoC Life Cycle/safety framework

15:00 Panagiotis Karagiannis and Dr Foteini Petrakli, Innovation in Research and Engineering Solutions -IRES, Belgium

Title: LCA & Nanosafety assessment in M3DLoC Pilot Line

The M3DLoC pilot line involves the synergistic use of a variety of different technologies employed to manufacture the M3DLoC microfluidic devices. Each pilot line workstation entails a specific set of safety hazards, while they are also characterised by a distinctive environmental footprint, given the prototype nature of the M3DLoC equipment and the unique materials used. Additionally, the use of nanomaterials is an important part for M3DLoC's innovations, which introduces nanosafety elements within the Pilot Line, as well as aspects of possible environmental impacts. In order to study the environmental and safety aspects of the M3DLoC Pilot Line, Life Cycle Assessment (LCA) and nanosafety studies were conducted and updated throughout the progression of the project. LCA is a standardized methodology based on ISO 14040:2006 and ISO 14044:2006. A cradle-to-grave approach was followed excluding use phase. Sensitivity analysis was performed in terms of both the EoL treatment and the electricity grid (Average EU vs GR). Manufacturing stage was identified as the main contributor. As FU has been defined the Life cycle of 1 3D printed substrate. The software and database used were the SimaPRO v9.1.1 and ecoinvent v3.6 respectively. In terms of nanosafety, the main focus was the study of possible nano- and micro- particle releases into the workplace air, which could present an inhalation hazard. To address this, a series of occupational exposure assessment measurement campaigns were conducted both within the pilot line premises and in dedicated workspaces, to investigate emissions from the function of the workstations and the materials applied. An extensive inventory of measurement devices was employed, following the OECD ENV/JM/MONO(2015)19 protocol.

Through these activities, the main hotspots in terms of environmental footprint and safety issues were identified, and actions to mitigate impacts were defined, where possible. The present talk will outline the methodologies followed to conduct the studies and present the main outcomes of the assessments.

M3DLoC Business Planning

15:15 Dr Bojan Boskovic & Dr Ana Bankovic Cassidy, Cambridge Nanomaterials Technology Ltd (CNT), UK

Title: Overview of current market and current trends and innovation management

An overview of current patenting and market trends in the field of microfluidics, 3D printing and nanocarbon medical devices will be given including key players and



ongoing projects. The importance of innovation management and modern exploitation tools will be introduced, as they are having an essential role in supporting the exploitation of cutting-age interdisciplinary technologies, such as 3D printed nanocarbon microfluidic medical devices. The introduction of nanocarbon materials such as graphene for 3D printed lab on chip (LoC) medical applications required stakeholders to understand and apply innovation management tools to secure translation from excellence of science, scaling-up of manufacturing processes and establishment of an industrial nanomedicine sector.

Dissemination and Networking Session & Closing

15:30 Discussion, visiting partners exhibition booths, poster session and networking
Partners virtual exhibition booths: www.medlocexpo.net

16:30 Closing of the Open Day Workshop

Prof. Costas A. Charitidis, NTUA, Greece -**M3DLoC** Project Coordinator and Open Day 2022 Co-Organiser

Dr Bojan Boskovic, Managing Director, Cambridge Nanomaterials Technology Ltd (CNT), UK
M3DLoC Open Day 2022 Co-Organiser

2.2 External Organisations

AnotherBrain

Web: www.anotherbrain.com

We are creating a new kind of new Artificial Intelligence: bio-inspired, frugal (low data and energy) and human-friendly, an alternative to deep learning, for people



NTUA – School of Mining & Metallurgical Engineering

Web: <http://eng.metal.ntua.gr/>



The onset of our School was the **Department of Mining and Metallurgical Engineering of the National Technical University of Athens (NTUA)** that was founded by government decree on February 27th, 1946. According to this decree, the School of Chemical Engineering was subdivided into three Departments: (a) the Department of Chemical Engineering, (b) the Department of Mining Engineering, and (c) the Department of Metallurgical Engineering.



University of the Aegean/Nanoplasmas PC

Web: www.nanoplasmas.com/en



Nanoplasmas is a spin-off company of NCSR Demokritos, with expertise in micro-nanotechnology and surface engineering, preparing high-end consumables for health, food safety, agricultural and environmental applications. Its patented technology has been incorporated into microfluidic devices creating lab-on-chip diagnostics. Nanoplasmas has several other products in the pipeline based on its innovative plasma nanotexturing technology.

Helmholtz Centre for Infection Research

Web: www.helmholtz-hzi.de/



The **Helmholtz Centre for Infection Research (HZI)** is a publicly funded research institute based in Braunschweig, Germany. HZI is a member of the Helmholtz Association of German Research Centres, the largest non-university scientific organisation in Germany.

Entrance to the Helmholtz Centre for Infection Research

The centre focuses on investigating infectious diseases caused by bacteria and viruses. Further research topics are the immune system and the development of novel anti-infective drugs.

BSRC "Alexander Fleming"

Web: www.fleming.gr/research/ifbr/researchers/koliaraki-lab



B.S.R.C. Fleming promotes cutting-edge research, aiming to understand molecular mechanisms of complex biological processes in health and disease. We are also committed to contribute to innovation in medicine, by developing novel therapeutic and diagnostic methods, focusing on immunity and inflammation, cancer, and neurodegenerative diseases.

ANODYNE NANOTECH and FORTH/IESL

Web: www.iesl.forth.gr/en/research/hybrid-nanostructures



The objective of the **hybrid nanostructures group** is to develop functional material nanostructures. This is achieved via the specialized design, synthesis and optimization of hybrid materials combining two or more types of functions. These materials possess specifically designed and optimized properties as well as tuning capabilities and they are appropriate for definite scientific and technological applications. They can be used from the household everyday life, to the automotive industries or to sections of even higher technological interest, as for example, robotics, photonics, lower cost laser sources, coatings



for barcodes or even coatings for airplanes for rescuing operations, biosensors, and structures that target biological applications like tissue engineering.

MaterDome



Web: www.materdome3d.com/

MaterDome is an Additive Manufacturing Solutions & Services Company. Combine Additive Manufacturing processes, high engineering materials, advanced optimization and industrial techniques into R&D to create extraordinary components.

Karolinska Institutet



Web: <https://ki.se/en>

Karolinska Institutet is one of the world's leading medical universities. Our mission is to contribute to the improvement of human health through research and education. Karolinska Institutet accounts for over 40 per cent of the medical academic research conducted in Sweden and offers the country's broadest range of education in medicine and health sciences.

2.3 Virtual Exhibition

Prior to the 2nd Open Day workshop, CNAT prepared for M3DLoC a virtual EXPO website (www.medlocexpo.net), where each M3DLoC Partner had their own exhibition booth. The virtual exhibition can be accessed through the M3DLoC website, **EXPO** tab (www.m3dloc.eu/EXPO). CNAT prepared for each M3DLoC Partner an individual exhibition stand, with a minimum of three pages; one for the description of the organisation (About us); their products and services, and a contact page.

People interested in participating in the Open Day, were able to register through the *Registration Desk* at the EXPO site.

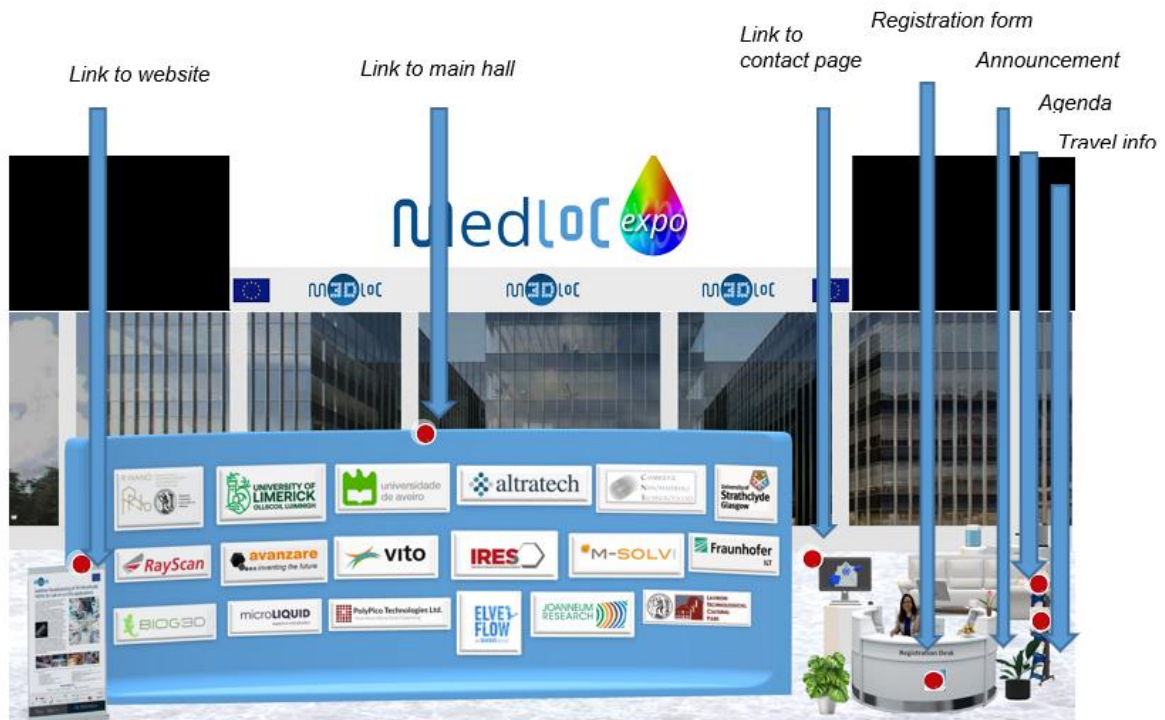


Figure 14 Screenshot of the reception hall



Figure 15 Screenshot of the EXPO hall

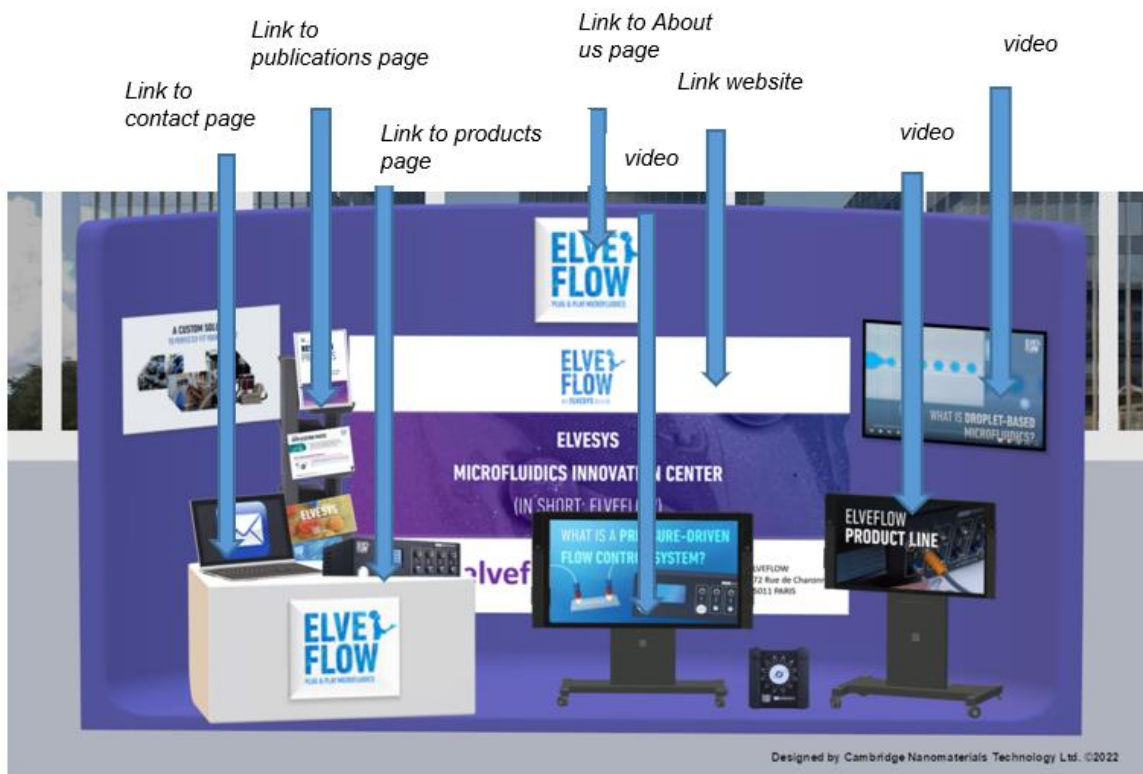


Figure 16 Sample of an exhibition booth



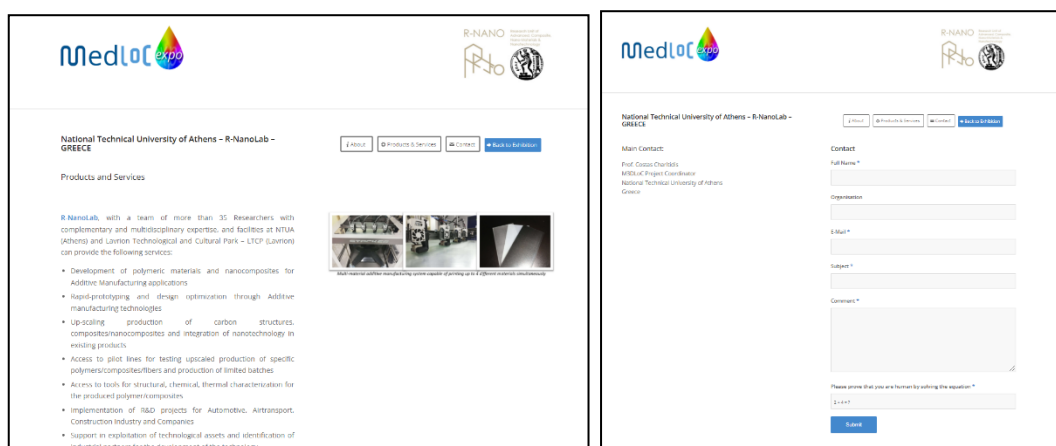


Figure 17 Sample of the partners' pages in the EXPO area

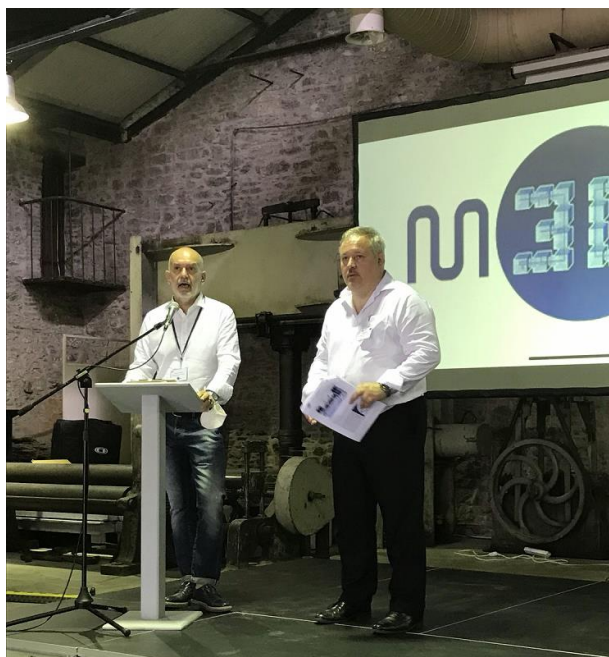
3. Annexes

3.1 Photos of the event

09:00 Welcome and Opening of the M3DL0C Open Day

Prof. Costas A. Charitidis, National Technical University of Athens (NTUA), Greece
- M3DL0C Project Coordinator,

Dr Bojan Boskovic, Managing Director, Cambridge Nanomaterials Technology Ltd (CNT), UK
M3DL0C Exploitation and Dissemination Management and Open Day 2022 Co-organiser





09:05 Prof. Costas A. Charitidis and Dimitris Fantanas, NTUA, Greece - M3DLoC Project Coordination and Open Day 2022 Co-organisers

Title: M3DLoC Overview and Impact



Presentation Session - M3DLoC pilot line materials, processes and metrology systems

09:15 Eleni Gkartzou, National Technical University of Athens -NTUA, Greece

Title: Fused Filament Fabrication (FFF) materials and process for microfluidic applications



09:30 Dr Wenlong Chang, University of Strathclyde, UK



Title: Nanosecond laser micro-structuring of epoxy painting surfaces adhering to an aluminum alloy



09:45 Karsten Braun, M. Sc. Fraunhofer Institute for Laser Technology ILT, Germany

Title: Laser processing – Laser ablation, structuring and surface polishing



10:00 Stephen Reilly, PolyPico Technologies Ltd, Ireland

Title: Multi-Channel Multi-Materials non-contact print system



10:15 *Coffee Break*

Visit partners virtual exhibition booths: www.medlocexpo.net



10:30 Dr Elvira Villaro Ábalos, Avanzare, Spain

Title: Carbon-based inks and formulations for functional coatings via inkjet deposition



10:45 Dr Alexander Tselev, Universidade de Aveiro, Portugal

Title: Hybrid scanning microscope utilizing an optical confocal sensor and near-field microwave probe



11:00 Philipp Jatzlau, RayScan Technologies GmbH, Germany

Title: Development of an X-ray radiography and laminography system for in-line inspection



11:15 Dr George Papazetis and Tzimas Evangelos, MTL-NTUA, Greece

Title: Pilot Line and system integration



11:30 *Coffee Break*

Visit partners virtual exhibition booths: www.medlocepo.net

Demonstration Session

M3DLoC and LTCP facilities

Sessions will take place in groups and will run in parallel

12:00 M3DLoC Pilot Line Demonstration - NTUA



LTCP facilities and history – LTCP



13:00 Lunch break

Visiting of the partners exhibition booths and networking (in person and virtually)

Partners virtual exhibition booths: www.medlocexpo.net



Presentation Sessions: M3DLoC Microfluidics

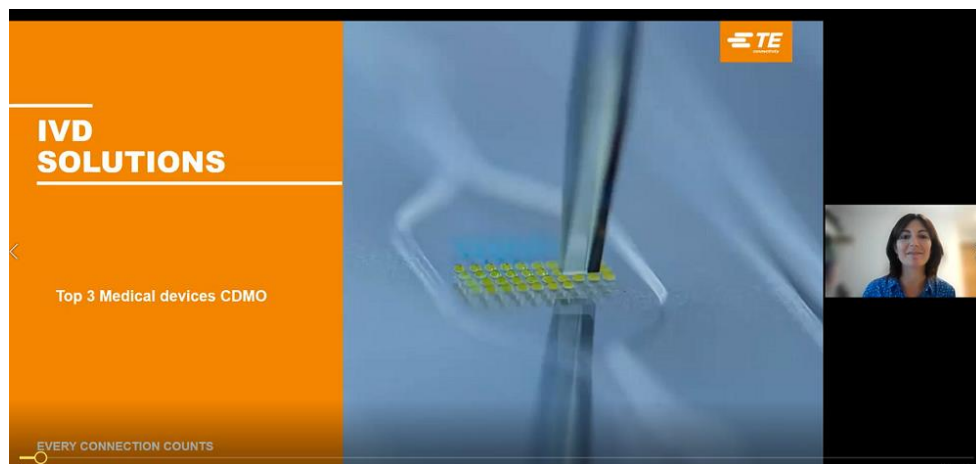
14:00 Dr Marlene Kopf, ELVESYS SAS, France

Title: Elvesys – Microfluidics Innovation Center



14:15 Dr Ikerne Etxebarria, MicroLiquid, Spain

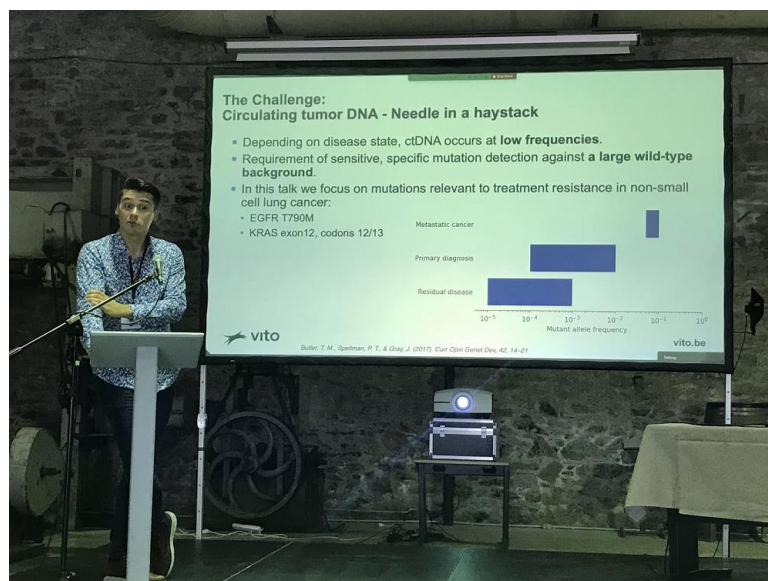
Title: Top 3 Medical devices CDMO



M3DLoC Detection Techniques

14:30 Mike Szymonik, VITO, Belgium

Title: Detection technologies for DNA mutations – from microarrays to lab-on-chip



14:45 Tim Cummins, CTO, AltraTech Limited, Ireland

Title: BeadCAP-based detection





M3DLoC Life Cycle/safety framework

15:00 Panagiotis Karagiannis and Dr Foteini Petrakli, Innovation in Research and Engineering Solutions -IRES, Belgium

Title: LCA & Nanosafety assessment in M3DLoC Pilot Line



M3DLoC Business Planning

15:15 Dr Bojan Boskovic & Dr Ana Bankovic Cassidy, Cambridge Nanomaterials Technology Ltd (CNT), UK

Title: Overview of current market and current trends and innovation management



Dissemination and Networking Session & Closing

15:30 Discussion, visiting partners exhibition booths, poster session and networking
Partners virtual exhibition booths: www.medlocexpo.net





16:30 Closing of the Open Day Workshop

Prof. Costas A. Charitidis, NTUA, Greece -**M3DLoC** Project Coordinator and **Open Day 2022** Co-Organiser

Dr Bojan Boskovic, Managing Director, Cambridge Nanomaterials Technology Ltd (CNT), UK
M3DLoC Open Day 2022 Co-Organiser



3.2 Other photos from the Open Day





3.3 Photos of the pilot line





3.4 Screenshots of partners virtual exhibition booths





