

2nd Newsletter

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EMPIR



The EMPIR initiative is co-funded by the European Union's Horizon 2020 research and innovation programme and the EMPIR Participating States

Welcome

One year has passed since the beginning of the project and it is with great pleasure that I welcome you to the second MFMET newsletter. We take this opportunity to inform and update you about news, achievements and results of our work.

In the first period of the project, the focus was on the development of guidelines and reports for each work package. Stakeholders' engagement intensified by establishing an advisory group. Several members of the consortium participated actively in the ISO TC 48/WG3 and MFA workshops, where the project was also presented. The first publication of the project was done on CCM magazine.

The reports for M9 were approved by EMPiR MSU and a 2nd publishable summary of the project is now available on the project website, MFMET.EU.

A new partner has joined the consortium - DTI, the National Metrology Institute (NMI) from Denmark.

I hope you will find valuable information in this newsletter. We are interested to keep in contact with you as stakeholders, users, or interested persons and we are looking forward to welcoming you in our project community.

Elsa Batista

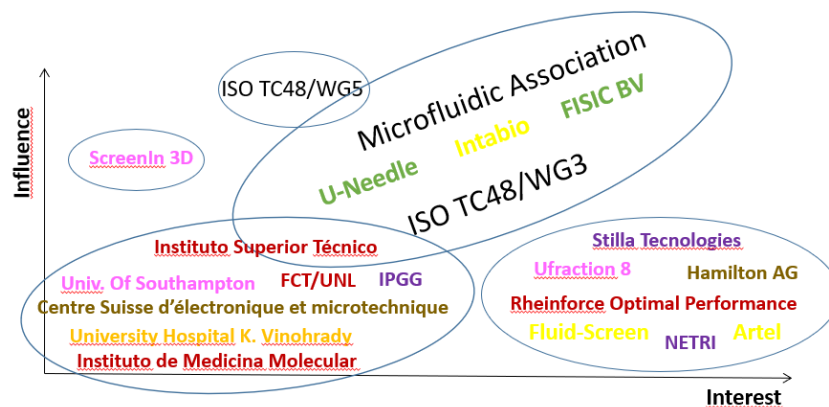
Coordinator

News and facts

- The second meeting of the project was held online, on 25th of February 2022.



- The project has the support of 22 stakeholders, the Microfluidics Association (MFA) being our chief stakeholder (<https://microfluidics-association.org/>). A stakeholder map was developed (see below).



- The MFMET advisory board was created with the following members: Marko Blom (Micronit), Hugo Bissig (METAS), Nicole Pamme (Stockholm University), Alexios Paul Tzannis (NILT), Bertrand Cinquin (ESPCI/IPGG/CNRS) and Xize Niu (Southampton University), with whom the consortium meets regularly.
- The project report reports regarding M9 were approved by EMPIR MSU.

Highlights from the work packages

In the first period of the project, the focus was on the development of guidelines and reports for each work package:

WP1 - Consensus-based flow control specifications for microfluidics

A Literature and Market Research compiling and classifying flow control components was finalized.

The identification of basic and general concepts and associated terms related to flow control was concluded. Both documents are already available on the project website [MFMET.EU](https://mfmet.eu) and Zenodo platform at <https://zenodo.org/communities/mfmet>, and delivered to ISO/TC 48/WG 3. A database inventory for flow control components containing base operating principles, family of components and types and subtypes of components is being developed, and will be available on the project website soon, to be explored and filled by any microfluidics user. The definition of a specifications list for comparison of flow control components is being developed, to make easier the choice between various components in the market.

The need for guidelines and test protocols to qualify leakage and burst pressure in microfluidic devices has led the partners to develop, together with The Microfluidics Association and other Microfluidics players, a White Paper for the Microfluidics Industry. This White Paper has information collected by enablingMNT in a survey completed in September 2021 and these results are also available on the project website [MFMET.EU](https://mfmet.eu). Fundamental questions about leakage testing have been formulated.

A test protocol for leakage and burst pressure is being developed following the work prepared for the White Paper.

The documents elaborated in this WP are aiming to be applicable throughout the entire microfluidics industry supply chain, from the manufacturer to the end user with the guarantee of traceability to the SI.

WP 2- Measurement protocols for different flow quantities and liquid properties

A literature review of existing metrology standards has been conducted and a generic methodology of accurate measurement of a particular quantity in a microfluidic device has been defined. The corresponding report is available on the project website [MFMET.EU](https://mfmet.eu) and on the Zenodo repository at <https://zenodo.org/record/6303716>.

EnablingMNT conducted interviews of 11 experts from academia and industry about measurement priorities during fabrication of microfluidic devices and components. The results are available on the consortium's repository.

3 flow quantities and 4 liquid properties have been identified and the report presenting the inventory of the above quantities and properties is available in the consortium's repository.

WP3 - General standards and guidelines for interfaces and connectivity

Based on past survey results, investigation of suppliers of microfluidic components and discussions with experts conducted by enablingMNT, partners could identify the most important and commonly used materials for microfluidics:

- COC/COP for microfluidic chips/substrates and several other applications,
- glass for microfluidic chips/substrates,
- PEEK and PTFE for connectors, tubes, pumps etc. and
- PC for cell cultures / organ on chip

A Test protocol for hydrophobicity, hydrophilicity and wettability was concluded.

The discussions about microfluidic connector with outside experts resulted in an initiative to develop a standard microfluidic connector. The requirements for such a connector will be translated into metrology challenges.

The work on WP4 did not yet started, but will start in the next month.

Dissemination of work

The project published a paper “Metrology challenges for microfluidics” in the magazine CMM International, in April 2022. The paper can be found [here](#). A summary of these challenges was published in Biophotonics, see <https://www.photonics.com/Issues/BioPhotonics/p1/i0>

In collaboration with MFA a whitepaper on leakage testing has been published. It can be seen on the project website MFMET.EU and Zenodo repository at <https://doi.org/10.5281/zenodo.6602161>. IPQ has presented the project in the MFA webinar – “The road to user friendly integration of microfluidic components and devices” on the 5th of May 2022. The presentation, given by Elsa Batista, the project Coordinator, was entitled “Metrology supports microfluidic fabrication and testing”. Florestan Ogheard from CETIAT organized the Q&A session of this online event, which had more than 60 participants.

enablingMNT gave presentations addressing metrology challenges the conference Polymer Replication Nanoscale in May 2022.

Apart from all the documents posted above, our 2nd publishable summary can also be found in the project website MFMET.EU.

Because one of the objectives of this project is to disseminate the work to and collaborate with ISO and users of the standards, several members of the consortium are involved in the work of ISO TC48/WG3 – Microfluidic devices, mainly in the development of *ISO/DIS 10991 - Microfluidics – Vocabulary* and *ISO TS WD 6417 - Microfluidic pumps – Symbols and performance communication*.

In the 5th meeting of the ISO TC 48/ WG3 held in October 2021, the project was presented to the WG by Elsa Batista (IPQ), with the title on “General information of MFMET project”.

Additionally, work from this project is being translated into TC48/WG5 - Liquid handling devices-automatic, mainly for the development of *ISO/TR 6037 - Automated liquid handling systems – Uncertainty of the measurement procedures*.

How to contact us

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