



2020

THE YEAR IN REVIEW

Last year had a significant impact on our lives - this was the time of changes, social distancing and remote work. While some of the businesses are slowing down, QWED is successfully expanding and growing up. The 2020 brought us some innovative work and new R&D projects. We are entering the new year full of creativity and stay open to new challenges and fruitful conference meetings as well... even those switched online.

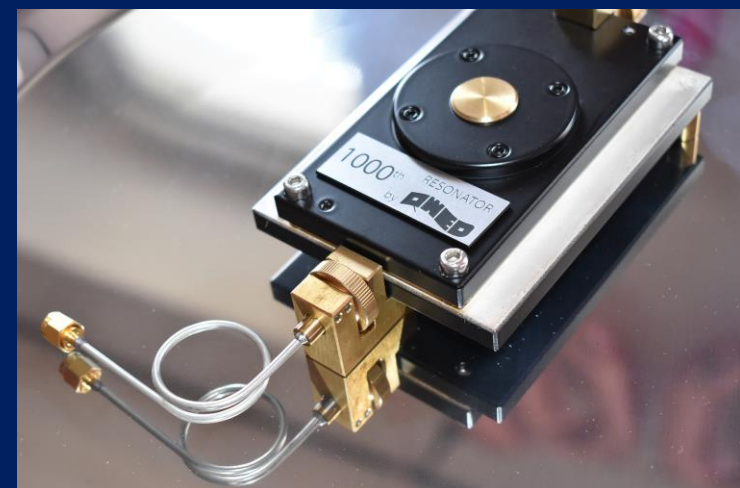
We are pleased to present some highlights of 2020.

1000th RESONATOR by QWED!

On March 13, 2020, QWED celebrated its jubilee sale of the 1000th unit of a dielectric-resonator-based test-fixture for microwave measurements of electromagnetic properties of materials.

The "1000th RESONATOR by QWED" plaque was mounted on a 5GHz SPDR, based on the original designs of Professor Jerzy Krupka, a distinguished long-time collaborator of QWED.

[Find out more >>](#)



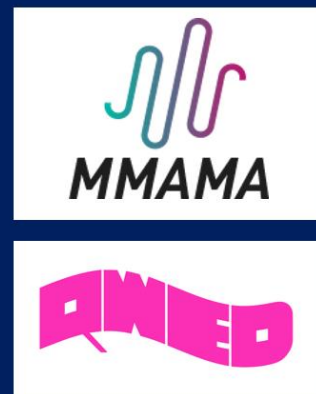


QWED's contributions to the ELSEVIER book

QWED's team has authored scientific content for the Elsevier book issued in April 2020, "Development of packaging and products for use in microwave ovens", chapters:

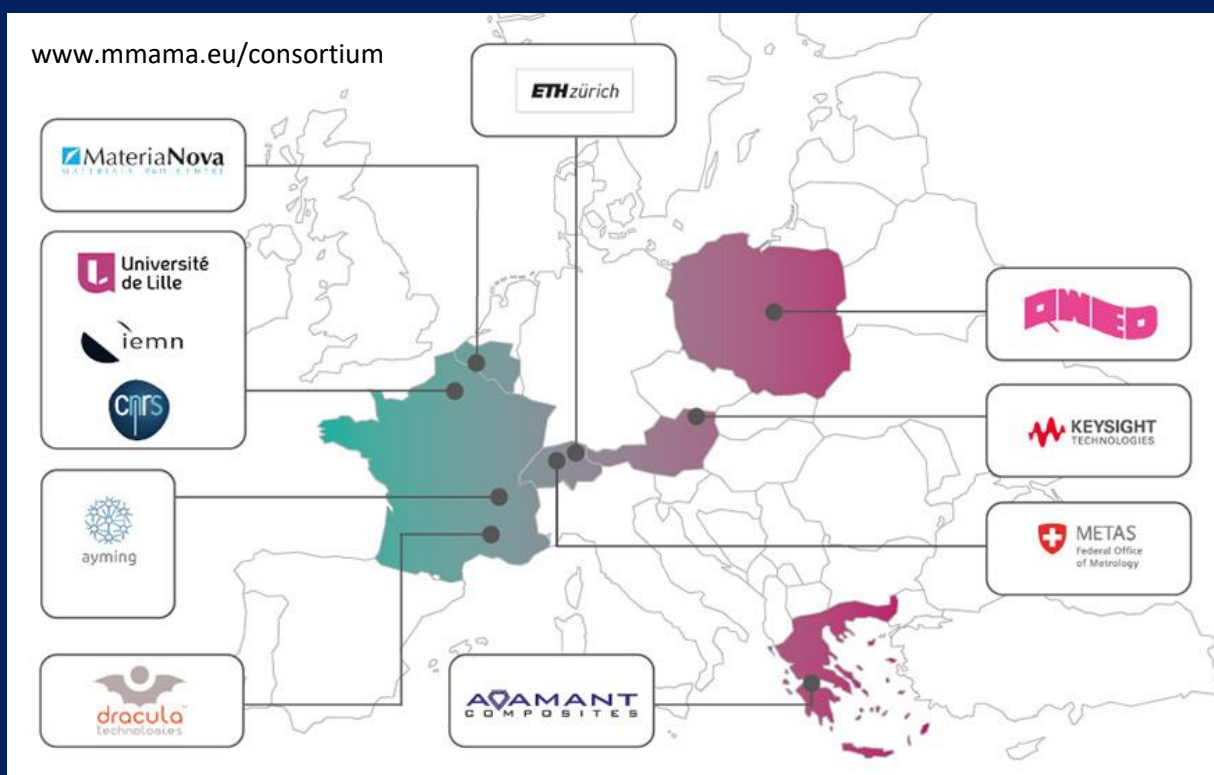
- *Modelling of cavities and loads with FDTD and FEM Methods.*
- *Space-discrete electromagnetic modelling of microwave susceptors.*
- *Modelling of excitation in domestic microwave ovens.*

[Find out more >>](#)



QWED's participation in H2020 R&D projects: MMAMA

MMAMA - Microwave Microscopy for Advanced and Efficient Materials Analysis and Production – was Horizon 2020 Research&Development project, in which QWED participated in various areas. In 2020 the MMAMA project ended up with great success, after 3 years of fruitful cooperation. The MMAMA Workshop organised by QWED in connection with the MIKON Conference in Warsaw, 5 October 2020, was attended by 24 on-site and 14 online participants.



The aim of the MMAMA project was to accelerate the development of high efficiency cells and to have measures to predict performances in early stages of prototype production. Where process monitoring of materials with nanostructures is necessary, a dielectric resonator is used to translate insights from scanning microwave microscope measurements to fabrication environments. Such dielectric resonators could be directly integrated in production lines for monitoring thin film deposition processes. An open innovation environment will make the uptake of the results easier for European industry.

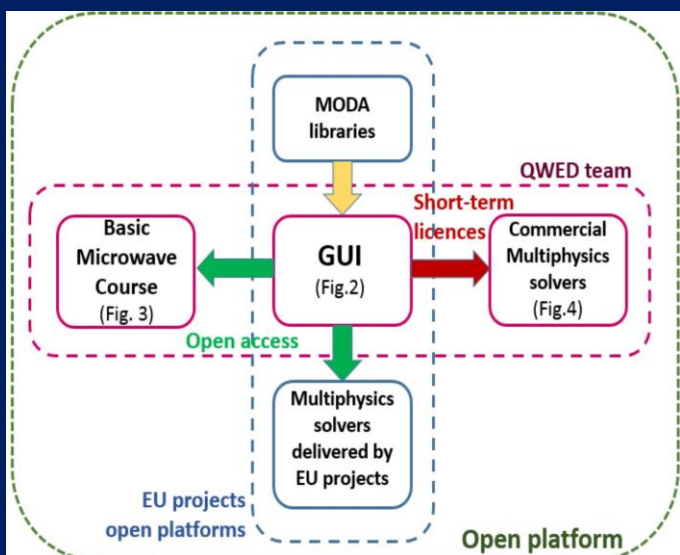
Below we present MMAMA Open Platform Tools and Examples:

MMAMA - OPEN PLATFORM

Open platform is an open access software platform for electromagnetic (EM) teaching and dissemination of microwave technology results. Its core is a licence-free GUI, wherefrom different EM and multiphysics solvers can be launched, under different licence schemes.

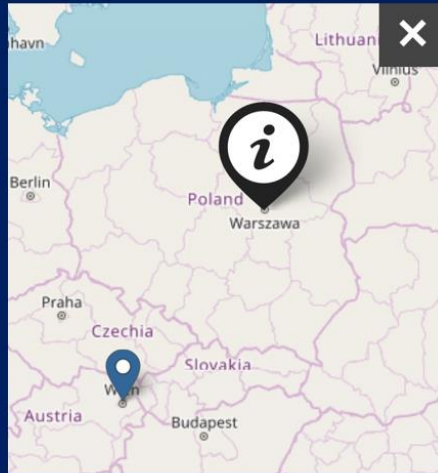
OPEN PLATFORM TOOLS:

- MMAMA-Modeller - licence-free CAD modeller developed within the MMAMA project
- QW-Modeller - general purpose 3D CAD modeller for QuickWave
- QuickWave - software for electromagnetic design and simulations based on conformal FDTD method





2D SPDR SCANNER at INNOVATION RADAR



Automatic portable microwave dielectric resonator kit for millimetre scale permittivity evaluation on large samples comprising QWED SPDR and KEYSIGHT FieldFox.

BY QWED SPOLKA Z OGRANICZONA
ODPOWIEDZIALNOSCIA →
#Women-led innovation

Topic: Industrial Technologies

Maturity: Exploring

Developed in project: MMAMA

[Learn more about the innovation →](#)

Within the H2020 MMAMA European Project, QWED has developed a 2D scanner based on 10GHz split-post dielectric resonator. The scanner has been successfully applied to the imaging of organic semiconductors. It can be operated with Keysight FieldFox or QWED portable Q-Meter, also developed in MMAMA Project. The 2D SPDR scanner with FieldFox was demonstrated at the Microwave & Radar Week.

This joint product of QWED and Keysight Technologies has been acknowledged as Innovation Radar of the European research. It is also marked as Women-led innovation.

The Innovation Radar is a European Commission initiative to identify high potential innovations and innovators in EU-funded research and innovation projects. The goal is to allow every citizen to discover the outputs of EU innovation funding and give them a chance to seek out innovators who could follow in the footsteps of companies such as Skype, TomTom, ARM Holdings - all of whom received EU funding in their early days!



Optimised Battery Production through Nanotechnology



Instrumentation & Technologies



Microscopy & Imaging



Modelling & Simulation



NanoBat aims to develop a novel nanotechnology toolbox for quality testing of Li-ion and beyond Lithium batteries.

QWED's participation in H2020 R&D projects: NanoBat

In April 2020 another R&D project started with QWED participation: Horizon 2020 **NanoBat** - GHz nanoscale electrical and dielectric measurements of the solid-electrolyte interphase and applications in the battery manufacturing line project.

[Read more about project >>](#)

NanoBat project aims to develop a novel nanotechnology toolbox for quality testing of Li-ion and beyond Lithium batteries with the potential to redefine battery production in Europe and worldwide. The targeted radio frequency (RF)-nanoscale techniques will be faster and more accurately calibrated than existing methods. The project will significantly reduce the costs of battery production thus greatly benefiting the evolving clean energy and e-mobility transition in Europe.



“Modern technology and tradition, vivid scientific discussions, and friendly atmosphere of getting together...” these words inspired organisers of **MIKON 2020** – traditional Polish microwave community conference.

The conference was a central event of the **Microwave and Radar Week** in Warsaw, Poland (October 5-7), where QWED played several roles such as: co-organising half-day workshop related to MMAMA project, or presenting R&D activities and our products on exhibition booth.

[QWED on MIKON >>](#)

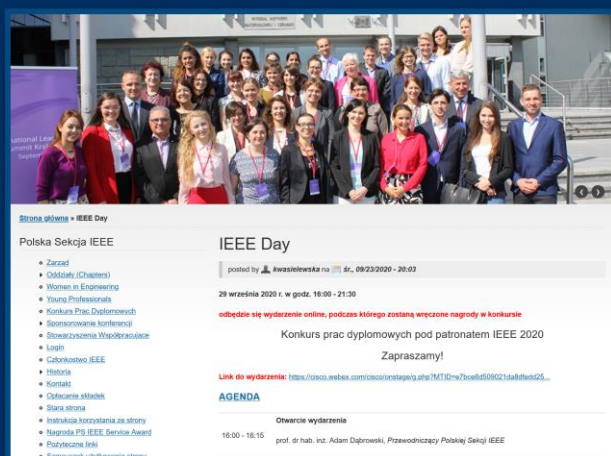


Women in Engineering acting at and through QWED

2020 was very special for the female part of QWED - **Dr. Malgorzata Celuch** and **Dr. Marzena Olszewska-Placha** became elected Members of Board of the **IEEE Poland Section Women in Engineering Affinity Group**. [Find out more on WiE & QWED](#)

Recently, Malgorzata and Marzena organised the first-ever **Women in Microwaves Special Session** in the framework of the Microwave & Radar Week. This made QWED gained new momentum in its diversity actions. [Read more about the session](#)

IEEE Strona Polskiej Sekcji IEEE



QWED has been active in scientific communities

Dr. Marzena Olszewska-Placha was invited to give a talk during **IEEE Day** virtual meeting (29 September 2020) organised by Polish Section of IEEE. A presentation titled **“Computer Multiphysics simulations – a must-have for emerging technologies”** was addressed to young researchers, to familiarise them and encourage to use physics-based computer simulations.

We hope You enjoyed our nutshell 2020 review. To keep up to date follow us on:

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