



# Newsletter



## MOCCA 1<sup>st</sup> reporting period ended in January!

MOCCA's 1<sup>st</sup> reporting period ended in January!  
How has MOCCA progressed so far? Find out on p. 2



MOCCA training activities,  
October 2020-March 2021

Despite the pandemic, the MOCCA Consortium has organized numerous and exciting training activities...

Read more on page 3

MOCCA Dissemination and  
Outreach activities

Six very intense months from the point of view of the dissemination of the project results..

Read more on page 4

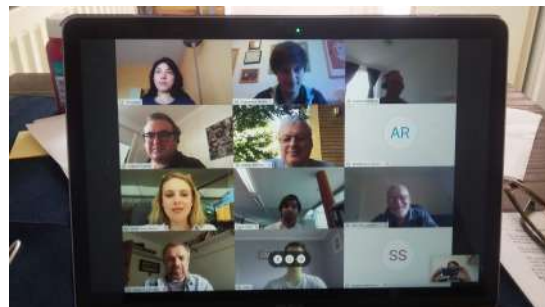


MOCCA is funded by the European Union's Horizon 2020 Research and Innovation Program under the Marie Skłodowska-Curie grant

agreement No 814147

## MOCCA's progresses

Started in February 2019, MOCCA's first reporting period ended in January 2021. In this two years MOCCA's ESRs have moved to their host institutions in Germany, France, Italy and the UK where they have started working on their research and attended training activities. MOCCA ESRs have also participated in network-wide training events, workshops and mini-symposia organized by the Consortium. They have worked toward the dissemination of their research among the academic and the general public through publications, paper presented at international conferences, blogs and public engagement activities. Since the beginning of the project, the MOCCA consortium has organized 1 open-to-all conference, 3 mini symposia, 2 workshops and 2 transferable skills workshops. Due to the outbreak of the pandemic, all the events organized since March 2020 have been held online.



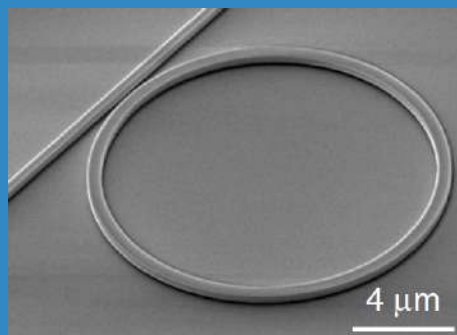
All MOCCA ESRs have started their **secondments**, but due to the travel restrictions most of the secondments are taking place remotely. Loredana Maria Massaro and Avinash Kumar did a 2-month secondment remotely at AMO and SUR respectively. Avinash's secondment took place in January and February 2021. After her secondment at AMO between June and August 2020, Loredana started a second one in III-V Labs. In March 2021, Victor Vassiliev has started a 18-month secondment at AMO remotely, in the hope that he will soon be able to go to Germany. Francesco Rinaldo Talenti, on the contrary, in December 2020 was able to reach Thales in Paris where he started his 18- month secondment.

**MOCCA Supervisory Board and IP Advisory board meetings** took place on November 25, 2020 on line. **The MOCCA Management meetings** was held on October 28, 2020 online. The next SB, IPAB and management meetings have already been scheduled for May, 18, 2021.

# MOCCA Training Activities

(October-March, 2021)

## Joint Mini Symposium “Semiconductor platform for optical frequency comb generation”



THE IMAGE IS TAKEN FROM: CHANG, L., XIE, W., SHU, H. ET AL. ULTRA-EFFICIENT FREQUENCY COMB GENERATION IN ALGAS-ON-INSULATOR MICRORESONATORS. NAT COMMUN 11, 1331, (2020)

Mini Symposium **Semiconductor platforms for optical frequency comb generation** was held on December 2, 2020 online. With the participation of ESRs, MOCCA WP leaders and external speakers, the aim of the workshop was to facilitate high-level discussions on important issues related to OFC technologies. The event was organized by MOCCA together with another H2020 ITN, coordinated by Aston: [POST-DIGITAL](#)

The speakers were chosen among well-known scholars and promising young researchers.

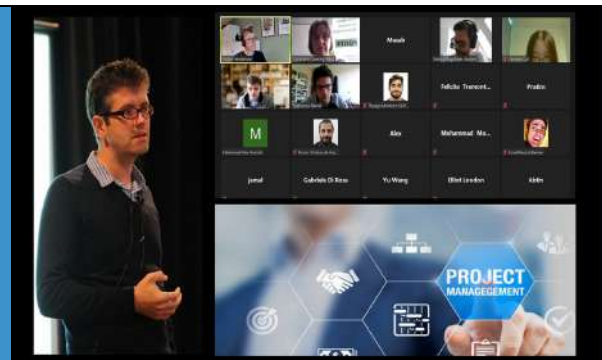
To know more please see:

<https://mocca.astonphotonics.uk/ms-semiconductor-platforms-for-optical-frequency-comb-generation/>

## MOCCA 2<sup>nd</sup>-year workshop and MOCCA Transferable Skills Workshop 2



The **MOCCA 2<sup>nd</sup>-year Workshop** took place (remotely) on November 25, 2020. During the event MOCCA ESRs presented the progress of their research. The event was joined by Dr. Piotr Cegielski (AMO) who gave a paper on “Integrated nanophotonic fabrication at AMO with SU8 photoresist”. To know more please see: <https://mocca.astonphotonics.uk/2-mocca-workshop/>



The three-day training event, featuring external speakers, addressed topics such as: entrepreneurship skills, project management and science communication.

Download the program at:  
[https://mocca.astonphotonics.uk/wp-content/uploads/sites/13/2020/02/27th-28th-February-2020\\_TSW-V3.pdf](https://mocca.astonphotonics.uk/wp-content/uploads/sites/13/2020/02/27th-28th-February-2020_TSW-V3.pdf)

The MOCCA Transferable Skills Workshop II was held on March 22-24, 2021. The event took place online, due to the pandemic, and was organized by MOCCA jointly with other sister ITN programs, coordinated by Aston (WON, GA No. 814276; REAL-NET, GA No. 813144; FONTE, GA No. 766115).



## Dissemination.....

In the last few months the first two articles written within MOCCA were published in academic journals.

### PROCEEDINGS OF SPIE

[SPIEDigitalLibrary.org/conference-proceedings-of-spie](https://spiedigitallibrary.org/conference-proceedings-of-spie)

Frequency comb generation in silicon nitride ring resonators with amplitude modulated pump

MOCCA ESR, Francesco Talenti, has published the article **“Frequency comb generation in silicon nitride ring resonators with amplitude modulated pump,”** in Proc. SPIE 11672, Laser Resonators, Microresonators, and Beam Control XXIII, 1167206 (5 March

2021). See <https://mocca.astonphotonics.uk/mocca-publications/> where you will also find a link to the article.

MOCCA senior scientists Alfredo De Rossi and fabrice Raineri's article **“Photonic crystal optical parametric oscillator”** has been published on Nature Photonics (December 2020). The article can be read following this [link](#)



## ...and outreach activities

Despite the pandemic, MOCCA ESRs have engaged in many outreach activities:

ESRs Loredana Maria Massaro and Francesco Rinaldo Talenti, have organized a series of lessons for high-school students. The lessons, originally planned in person, were moved online because of the pandemic. The objective of the initiative is to familiarize high-school students with



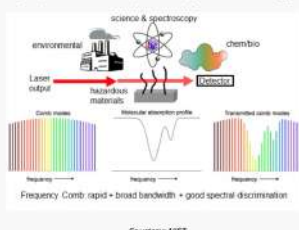
Photonics and in particular with frequency combs. Lessons are currently held remotely due to the pandemic. The first two lessons (19 and 26 January 2021) were aimed at students of the high school "Liceo Visconti" in Rome. A third lesson (25 February 2021) was aimed at the student of the high school "Liceo Scientifico Guido Castelnuovo", Florence, Italy. A further one is scheduled for May 2021.



representing a step towards precision spectroscopy. The optical resonance frequencies of atomic hydrogen and other atoms with the microwave frequency of a cesium atomic clock are already establishing sensitive limits for possible slow variations of fundamental constants."

*Theodor W. Hänsch / Nobel Lecture 2005: Passion for precision*

Optical high harmonic generation and new device platforms are extending frequency combs into the extreme ultraviolet, opening a new spectral territory to precision laser spectroscopy, GPS technology and LIDARs.



MOCCA ESR, Avinash Kumar, is publishing a blog series on the progress of his research. The first blogpost is titled: **Towards Advanced Optical Frequency Combs** and can be read on the MOCCA website:



<https://mocca.astonphotronics.uk/avinashs-blog/>

For more info on dissemination and outreach activities, see:

<https://mocca.astonphotronics.uk/news/>



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<https://mocca.astonphotonics.uk>

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