

PLASMONICA: Building Human Potential in Nano-optics

<http://www.fisi.polimi.it/it/plasmonica2013>

<http://www.sbai.uniroma1.it/conferenze/plasmonica2014/>

<http://plasmonica2015.dfa.unipd.it/>

More than 100 young investigators of all nationalities working in Italy and young Italians working abroad have gathered in Milan in 2013 and in Rome in 2014 to discuss the present and the future of the multi-disciplinary research field of Plasmonics. It turned out that more direct communication provides more ideas, a fair competition and the build-up of excellent personal relations.

The economy crisis brought to a significant decrease of Italian public spending for research. Instead of just complaining and/or quitting their research jobs, young researchers with activities in the fields of Plasmonics and Nano-optics have decided to meet up and talk to each other in a series of dedicated workshops.

Plasmonics is the interdisciplinary field of research located between physics, chemistry, biology and engineering that exploits the natural oscillations of the electron plasma, present in all metals and semiconductors, to obtain performance improvements of photonic devices at infrared and visible light frequencies. It can also be considered a sub-field of metal/semiconductor nanotechnology where light plays the role of the external driving force. The workshop topics based on technology advances were: Plasmon-enhanced Nanospectroscopy and Nanoimaging, Optical Antennae and Metamaterials, Integrated and Hybrid Devices (sensors, waveguides, and photovoltaics), Plasmonics for Biology and Medicine. Three topics with more futuristic flavor were also discussed: Unconventional Plasmonic Materials and Frequency Ranges, Quantum Plasmonics and Magneto-Plasmonics.

The first outcome of the workshops was: a lot of very good science is being produced and disseminated by researchers working in Italy and Italians working abroad in Europe, in spite of the reduced resources. The second result was: we are not alone! If one research team does not have the resources for accomplishing specific research tasks, instead of giving up that task it can resort to European collaborations. The last result was: the Italian research infrastructure is mainly made of very small teams and very small enterprises. Although this does not come as a surprise, it is nice to see people belonging to other teams and companies with our own eyes and talk to them. And a free annual meeting held in public University rooms, with talks, poster sessions and coffee breaks, where young investigators can train themselves for their future careers, is exactly what they need to become more optimistic.



University of Padua, hosting the 2015 edition of the workshop "Plasmonica". How to build bridges between basic science and high-technology products?



The group photo of the 2014 edition of the workshop "Plasmonica" held in Rome. The first edition was held in Milan in June 2013.

The series of workshops named "Plasmonica" has now reached its third edition, to be held in Padua in July 2015. The 2013 edition was held in Milan and the 2014 edition in Rome. A scientific committee made of young Italian investigators working in top-level institutions worldwide has selected about 40 abstracts for oral communications, which were mostly given by doctoral students and post-doc researchers, while the rest of the works were presented in lively poster sessions with rich coffee breaks. The total of about 80 abstracts written in English were collected in a conference booklet. The aim of the workshop was to provide young researchers with a "playground" where they can learn new methods and concepts, express themselves, and train for international conferences.

In the 2013 and 2014 editions, women were 40% of the participants, and the average age of all participants was 29. These figures indicate that a strong human potential exists in Italy as well as in all other European countries, which is the main ingredient to build the bridge between ideas and realization. Not all of the young researchers that will gather in the beautiful rooms of the ancient University of Padua in 2015 will become famous academics. Most of them will play their role in the development of new device concepts which will be carried out by technology companies.

The aim of the "Plasmonica" workshop series is to foster a scientific community that takes special care with the formation of young researchers and is able to provide them with a high qualification in the field of materials and devices for future nanophotonic applications. To this aim, interdisciplinary academic and industrial collaborations are optimized, through efficient networking, coordination, and dissemination activities. At "Plasmonica", companies can find the rough gemstones that will be carved into fine high-technology products.