Since the early origin of the Microwave Centre, the scientific identity of IFAC (now Nello Carrara Institute of Applied Physics) was essentially research-driven and characterized by logic, foresight, and perseverance. Over the years, IFAC has been able to adapt to the needs of a knowledge-based society while constantly evolving to become a leading research institute in the fields of applied physics and technology.

IFAC’s main aim is to carry out research, with a firm determination to develop new technologies and methodologies that could be effectively transferred to the economic system. The approach to research, with a clear determination to develop new techniques and tools, is the core of the activities. ITER, the International Thermonuclear Experimental Reactor, is a prime example of this methodology. The ITER project is an international collaboration aimed at achieving fusion energy, a new source of sustainable energy.

IFAC also contributes to cosmological studies together with the National Institute of Nuclear Physics of Italy, such as the BICEP2/Keck experiments, CMB POL campaign, and the PLANCK project on cosmology. IFAC is also active in European projects, such as the European space agency (ESA) missions on Earth observation and the European Space Agency’s (ESA) projects on the cosmic microwave background (CMB) and astrophysics.

The Nello Carrara Institute of Applied Physics (IFAC) is a part of the National Research Council (CNR), which is the main public organization for fundamental research and higher education in Italy. IFAC was founded in 1945 and originally known as the “Microwave Centre”, thanks to Nello Carrara, a pioneer in the field of microwave technology. During the years, IFAC has grown into a leading research institute in the fields of applied physics and technology.

IFAC also contributes to research and innovation activities, such as NEMO, ENOC, EFONGA on environmental monitoring, and CAREMAN on biosensors for health care, among others. The Institute is also involved in several European projects, such as NEMO, ENOC, EFONGA, and CAREMAN, on biosensors for health care, among others. The Institute is also involved in several European projects, such as NEMO, ENOC, EFONGA, and CAREMAN, on biosensors for health care, among others.
LASERS

The focus of our research is on active materials and devices for biophotonics, in particular the development and characterization of active materials for photonic components and devices.

These devices are designed to operate at the nanoscale and to achieve high efficiency and high power.

In this context, we develop new active materials and devices for biophotonics, in particular biophotonic microsensors, nanophotonic devices, and optoelectronic devices.

The use of these new materials and devices will lead to new applications in biomedicine and biotechnology.

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