

Scientific excellence is our guiding light



STRUCTURE DYNAMICS REACTIVITY

Studying molecules in every situation: isolated, self-organized in complex liquids or in mixtures, at equilibrium or photo-excited, in relaxation or propagation processes, in room conditions or under high pressure, very cold or very hot.

BIOPHYSICS

Laser light as a probe to investigate the world of the living: single molecule techniques for the manipulation and detection of biomolecules in vitro and in vivo and imaging methodologies for analysis of biological structures and of various events in cells, tissues and living animals.



ATOMIC PHYSICS

In the realm of ultra low temperatures, ordinary matter loses its familiar properties and becomes a silver key to open the quantum world gates: cold atoms, Bose-Einstein condensates and Fermi-degenerate gases for all new applications.

PHOTONICS

All about light. From its quantum properties, to its linear and highly-nonlinear interactions with matter, from atoms to solid state nanostructures, from random to periodic mesoscopic systems. Focus on fundamental issues on quantum physics, light transport, spectroscopy and their applications.

Interdisciplinarity is the keyword that best describes research activity at LENS: founded by a little group of scientists prevalently involved in atomic and molecular laser spectroscopy, in its 20 years of life LENS has grown developing and differentiating the research lines in new directions. From atomic physics to photochemistry, biochemistry and biophysics, from material science to photonics, from art restoration and preservation to solid and liquid state physics, all of these fields share the same fundamental methodology: the use of laser light to investigate matter. Here a short description of the principal research lines presently active at LENS is given. The distinction of four different main research areas and eighteen research topics is done mostly to make the presentation easier. Currently cross-interactions and contaminations between research teams not only are present and frequent, but also represent one of the strengths of the laboratory.