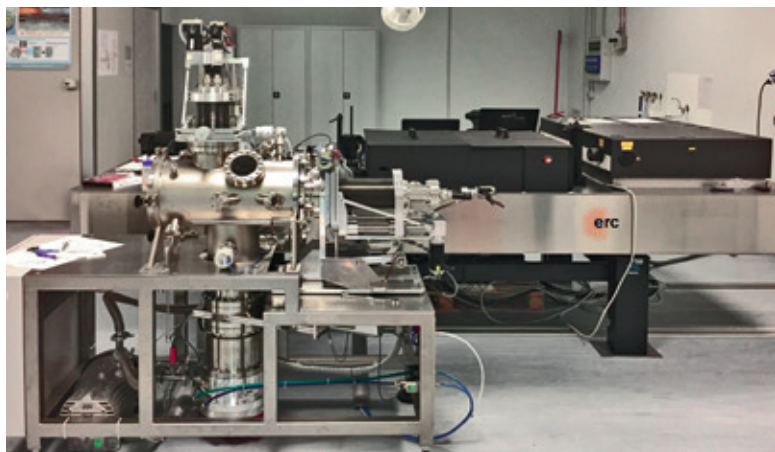


Particle acceleration: new frontiers are explored

Results of the Erc Ensure project from Politecnico di Milano

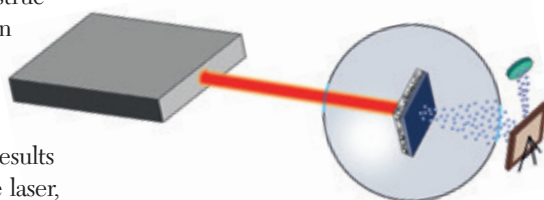


LABORATORY FOR THE SYNTHESIS OF INNOVATIVE MATERIALS BY WAY OF THE FEMTOSECOND PULSED LASER DEPOSITION TECHNIQUE

After five years of work, ENSURE, an H2020 project developed at the Politecnico di Milano, has accomplished its main objective: to master and optimise a technique for particle acceleration that is not conventional, like protons or other ions, by irradiating nanostructured materials with innovative properties (made by the team) with ultra-intense and ultra-short laser impulses. This approach may allow the creation of more compact and flexible accelerators in the future, with reduced costs of construction and radiation protection, for applications in various fields: medical, industrial, and even artistic. Let us think of the identification of materials, or the analysis of their properties, such as the study of a painting starting with the materials which

it is made of. “The research on the acceleration process that we have investigated, both from a theoretical and experimental point of view, has delivered positive results - highlights Matteo Passoni, full professor in Theoretical Physics of Materials and head of the project -. For example, we have produced materials with peculiar properties, such as ultra-low density nanostructured carbon foams, which can make the acceleration process much more efficient. We have also demonstrated that we can improve the results by focusing, in addition to the laser, on irradiated materials, a less technologically demanding and complex direction. We have already begun to explore a number of promising applications of this approach”. In addition

to the scientific results, Ensure has made it possible to achieve other important goals. First, the Politecnico di Milano has equipped itself with two new laboratories that house advanced scientific instrumentation for the production of the innovative materials necessary for the manufacture of irradiated targets and also for other areas of research. In addition, two conferences held at the Politecnico during the project have attracted the attention of the international scientific community, providing visibility to the work team’s activity, and enhancing the standing of the university in this sector. The growth of this research group is also an additional benefit: “Over the years - proceeds Passoni - a dozen young Italian researchers have had the opportunity to work with me at the Politecnico”. At the same time, the research activity has brought about important collaborations with excellent industrial and academic realities. Further information is available on the project website: www.ensure.polimi.it. ■



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