

Pozvánka na seminář katedry fyziky

Kdy: čtvrtek **6. října 2022 od 13 h**

Kde: zasedací místnost 2.32, budova CPTO

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z Ústavu jaderné fyziky AV ČR, Řež bude hovořit na téma

Ion Beam Analysis and laser-matter interaction applied in material science, biomedicine, and cultural heritage

Abstract: An overview of the research activity related to Ion Beam Analysis methods and laser-matter interaction performed at the Tandatron Laboratory (LT) of the Nuclear Physics Institute in the Czech Republic will be presented. The unique ion microbeam system present in the Czech Republic belongs to our laboratory and it is used for the irradiation of cells, and for the production of three-dimensional (3D) microstructures in polymeric and graphene-based materials. Several micro-scale membranes and circuits have been fabricated selecting the beam, the energy, the fluence, and the exposition time for application in nanotechnology and biomedicine. The quality of the sidewalls of the produced structure was investigated by Scanning Transmission Ion Microscopy (STIM). Following up on the increasing demand for advanced material engineering in microelectronics, biomedicine and fundamental science, several types of new generation hybrid material were designed and produced by laser-matter interaction. Another interesting field we are developing in collaboration with the University of Messina (Italy) is related to the cultural heritage field. The non-destructive and non-invasive multi-analytical approach was employed to perform self-consistent analyses taking advantage of their complementary character in the study of inestimably high value artifacts belonging to renowned archaeological sites in Italy, Greece, and Azerbaijan. The composition, of pigments, the materials used for the decorations, the manufacturing procedure and to study the preservation of the objects were investigated.