WHO WE ARE

Nuclear Technology and Radiology have been strongholds of the Centre since the early days it was established. Today they provide not only important scientific discoveries but also some unique user-accessible research and education infrastructure for the entire country. In 1961 Demokritos was founded as a Nuclear Research Center. The large-scale infrastructures such as the Nuclear Reactor, the Radioactive Waste Management Center, the TANDEM Accelerator, and the Hot Cells for the production of Radiopharmaceuticals comprise the bulk nuclear facilities in Greece. Throughout the years and following the transition of the general research directions at Demokritos, Nuclear and Radiological Technologies have also evolved and today they play important roles in several interdisciplinary research projects aiming at Security, Material Characterization, Health and Culture.

Highly Specialized Scientific Facilities

Nuclear Research Reactor Laboratory: Neutronic and Activation Code Systems, Neutron Activation Dosimetry • TANDEM Accelerator: Ion Irradiation & Ion Beam Analytical Techniques • Radioisotopes and Radiopharmaceuticals Laboratory: Synthesis, Radio-Labeling, Quality Control and Preclinical Animal Studies • Health Physics, Radiobiology and Cytogenetics • Environmental Radioactivity Laboratory • Radioactive Materials Management Laboratory • Radioactive Waste Center including Transportation and Distribution of Radioactive Isotopes • Magnetron Sputtering and High Temperature Furnaces under Vacuum and Inert Gases • Positron Annihilation and Gamma Spectrometry • Neutronic and activation code systems, neutron activation dosimetry, gamma spectrometers
RESEARCH

Nuclear Science & Technology
Fission  Stochastic dynamic neutronic code development with thermal-hydraulic feedback 
Reactors physics studies including accelerator driven systems 
Nuclear reactor safety activities taking advantage of the sustained evolution in information technology 
Decision support for emergency management due to nuclear or radiological events

Fusion  Materials development and testing 
Materials under fusion environment 
Neutronic calculations and components for Fusion devices 
Radiological assessment of Fusion materials

Radiological Science & Technology
Radioprotection & Biodosimetry radioprotection absorbed dose and risk estimation following exposure to ionizing radiation

Radiobiology & Radiocytogenetics evaluation of individual radiosensitivity and of the effect of drugs related to radiotherapy

Radioecology environmental radioactivity assessment of environmental radioactivity and radiological impact on ecosystems

Radiopharmacy molecular radiopharmacy: development of novel radiopharmaceuticals for medical imaging and radiotherapy

Radiation Physics Development and application of radioanalytical techniques in material and cultural heritage studies 
Development and application of techniques for radiological characterization of radioactive waste and nuclear facilities

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