

LNGS SEMINAR SERIES

László Palcsu

Institute for Nuclear Research
Hungarian Academy of Sciences

Research activities in environmental physics in Atomki

One of the largest research group in the Institute of Nuclear Research is the Hertelendi Laboratory of Environmental Studies (HLES), a multidisciplinary team dedicated to research in nuclear analytical methods, environmental isotope research. In operation for more than 20 years it has established a national and international reputation as a premier analytical laboratory, which has considerable expertise in mass spectrometry, radiocarbon dating, low-level gamma and beta counting techniques, and environmental physics.

The main fields of the research activity in the HLES are the follows: isotope geochemistry of speleothems; revealing fossil and biogenic components in the atmospheric carbon budget; radiocarbon chronologies of ancient settlements; reconstruction of environmental changes in the Carpathian basin – vegetation history, sedimentation rates by radiocarbon dating and stable isotope signatures ($\delta^{18}\text{O}$, $\delta^2\text{H}$, $\delta^{13}\text{C}$); studying recharge rates using $^3\text{H}/^3\text{He}$ dating of recent groundwaters; determination of recharge temperatures of groundwater by dissolved noble gases and stable isotopes ($\delta^{18}\text{O}$, $\delta^2\text{H}$); stable isotope geochemistry of natural gas reservoirs; isotope hydrogeology and isotope hydrology – vulnerability of aquifers; the origin of dissolved nitrate, ammonium and sulphate in surface water and drinking water; infiltration, mixing and residence time in karst aquifers; present climate change – monitoring of $\delta^{18}\text{O}$, $\delta^2\text{H}$ values and tritium concentration in precipitation; trend of ice formation rates in ice caves ($\delta^{18}\text{O}$, $\delta^2\text{H}$, tritium); monitoring of radioactive pollution in air and groundwater around nuclear facilities; quality control for the safe management and disposal of low and intermediate level radioactive waste (gas formation, concentration of “difficult-to-measure” isotopes in L/IL radioactive waste packages).

Additionally to the research activities of the HLES, other groups works in multidisciplinary science as well: aerosol geochemistry in the Ion Beam Physics Group; Radon Group; K/Ar-Ar/Ar Geochronology of igneous and volcanic rocks and minerals; etc.

The presentation will give an overview about what topics could be studied in a joint cooperation between LNGS and HLES.

NOVEMBER 3, 2015 - 2:30 PM
LNGS - “E. MAJORANA” ROOM