

Curriculum Vitae
László Palcsu PhD
Senior researcher

Personal details

Nationality: Hungarian
Date and place of birth: 1st January 1975, Mezőhegyes, Hungary
Civil status: married
Children: yes (two boys and a girl)
Languages: Hungarian (native), English (good),
German (intermediate), Russian (poor)

Affiliation

Institute for Nuclear Research, Hungarian Academy of Sciences,
Hertelendi Laboratory of Environmental Studies
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Work experience

2011- Institute of Nuclear Research of the Hungarian Academy of Sciences, Debrecen, Hungary
Senior researcher

Head of Laboratory of Environmental Studies
Head of Section of Environmental and Earth Sciences

- Isotope geochemistry of karst systems
- isotope hydrology of karst aquifers, groundwater age determination
- Palaeoclimate reconstruction based on noble gas solubility temperatures in confined groundwater aquifers
- Speleothem research

2007-2011 Institute of Nuclear Research of the Hungarian Academy of Sciences, Debrecen, Hungary
Associate researcher

- Improving the noble gas laboratory, installation of a new cryogenic trap system, developing and establishing an appropriate method to measure all of the five noble gases from groundwater samples with better precision
- Further effort in the field of noble gases in fluid inclusions of speleothems as a new palaeoclimate proxy
- Determination of noble gas temperatures of groundwater samples from the Great Hungarian Plain
- Examining of thermal waters from the Great Hungarian Plain using helium and noble gas isotopes
- T-³He age determination of young, shallow groundwater aquifers

2005-2007 Institute of Environmental Physics, University of Heidelberg, Germany
Marie Curie postdoctoral researcher

- Examination of excess air formation in groundwater in laboratory and environmental conditions
- Investigation of degassing effects in groundwater, laboratory experiments on water samples depleted in noble gases
- Advancing the use of noble gases in fluid inclusions of speleothems as a new palaeoclimate proxy

2003-2005 Institute of Nuclear Research of the Hungarian Academy of Sciences, Debrecen, Hungary
Associate researcher, Laboratory of Environmental Studies

- Examination of isotopic composition of precipitation in meteorological point of view
- Studying of dissolved gases in the coolant of the cooling ponds and service pools of the nuclear power plant of Hungary
- Determination of activity concentration of iodine isotopes in the primary water of Paks Nuclear Power Plant by the noble gas mass spectrometric measurements of the

daughter xenon isotopes

2001-2003 **Institute of Nuclear Research of the Hungarian Academy of Sciences, Debrecen, Hungary**
Junior researcher, Laboratory of Environmental Studies

- Examination of the tritium distribution in the groundwater within the safety assessment program for the near surface radioactive waste treatment and disposal facility
- Aquifer vulnerability studies, water age determination
- Determination of noble gas content in deep waters, determination of helium-age
- Analysis of dissolved stable noble gas isotopes in the primary water of Paks Nuclear Power Plant
- Analysis of tritium concentration of environmental water samples by ^3He -ingrowth method

1998-2001 **Institute of Nuclear Research of the Hungarian Academy of Sciences, Debrecen, Hungary**
PhD student, Laboratory of Environmental Studies,

supervisors: Ede Hertelendi and Árpád Zoltán Kiss

- Method development for tritium measurement in environmental water samples by the noble gas mass spectrometric measurement of ^3He
- Examination of origin and age of thermal waters in the Carpathian Basin
- Detection of leakage of fuel elements by xenon isotope ratios in primary water of Paks Nuclear Power Plant
- Determination of dynamic adsorption coefficient of three different types of activated charcoal for xenon and krypton at room temperature

Education

01/03/2005-28/02/2007: Marie Curie Fellowship in Heidelberg, Germany: Advancing the use of noble gases as palaeoclimate indicators

29/11/2003: PhD in physics, Summa cum laude, Field of study: noble gas mass spectrometry, isotope hydrology, fission produced noble gas isotopes, title of the thesis: "Noble gas mass spectrometry in hydrology and nuclear industry", supervisors: Ede Hertelendi and Árpád Zoltán Kiss

1998-2001: PhD student, in the Institute of Nuclear Research of the Hungarian Academy of Science

1993-1998: University of Debrecen, Debrecen, Hungary, MSc in physics, supervisor: Ede Hertelendi, field of study: noble gas mass spectrometry

1989-1993: Training Secondary School of the Lajos Kossuth University, Debrecen, Hungary, section of physics

Trainings: Short Term Scientific Mission in the *Laboratoire des Sciences du Climat et de l'Environnement, Paris* within the COST-621 Actions in November 2000

Memberships

2003- Working Committee on Hydrogeology of the Academic Committee of Debrecen

Hobbies

Sports: Handball, jogging

Others: Excursion in the mountains, gardening

Projects

- Isotope Climatology and Environmental Research Centre (ICER): Strengthening palaeo and recent isotope geochemical research processes. 2016-2020.

- IAEA Coordinated Research Project: ESTIMATION OF GROUNDWATER RECHARGE AND DISCHARGE USING THE $^3\text{H}/^3\text{He}$ DATING TECHNIQUE (F33018)

- Marie Curie Reintegration Grant, 2008-2011

- TRIC2008 IAEA Intercomparison Exercise of Low-Level Tritium Measurements in Water

- Paleoclimate study on groundwater supported by the Hungarian Science Foundation 2006-2009

- Marie Curie Fellowship, Heidelberg, Germany, 2005-2007

- WE-Heraeus-Summerschool "Physics of the Environment" held in Bad Honnef, Germany, 28 Aug.-3 Sept. 2005.

- NATO Science for Peace, SQUASH project, Quantitative and qualitative hydrogeological study of the alluvial aquifer of Somes-Szamos (Romania-Hungary), 2004.
- Safety Analysis of the Püspökszilágy Radioactive Waste Treatment and Disposal Facility (RWTDF). Project No PH4.12/95
- Assessment and management of vulnerable aquifers. Hungarian National Project
- TRIC2004 Seventh IAEA Intercomparison Exercise of Low-Level Tritium Measurements in Water

Main publications

- Palcsu, L.**; Morgenstern, U.; Sültenfuss, J.; Koltai, G.; László, E.; Temovski, M.; Major, Z.; Nagy, J.T.; Papp, L.; Varlam, C.; Faurescu, I.; Túri, M.; Rinyu, L.; Czuppo, G. Bottyán, E., Jull, A.J.T. Modulation of Cosmogenic Tritium in Meteoric Precipitation by the 11-year Cycle of Solar Magnetic Field Activity. *Scientific Reports*, 8 (2018) 12813.
- Hubay, K.; Braun, M.; Harangi, S.; **Palcsu, L.**; Túri, M.; Jull, A.J.; Molnár, M. High-Resolution Peat Core Chronology Covering the Last 12 kyr Applying an Improved Peat Bog Sampling. *Radiocarbon* 60 (2018) 1367-1378.
- Kaizer, J.; Aoyama, M.; Kumamoto, Y.; Molnár, M.; **Palcsu, L.**; Povinec, P.P. Tritium and radiocarbon in the western North Pacific waters: post-Fukushima situation. *Journal of Environmental Radioactivity*. 184-185 (2018) 83-94.
- Kern, Z.; **Palcsu, L.**; Pavuza, R.; Molnár, M. Age Estimates on the Deposition of the Cave Ice Block in the Saarhalle Dachstein-Mammoth Cave (Mammuthöhle, Austria) based on ^3H and ^{14}C . *Radiocarbon* 60 (2018) 1379-1389.
- Temovski, M ; Futó, I ; Túri, M ; **Palcsu, L** Sulfur and oxygen isotopes in the gypsum deposits of the Provalata sulfuric acid cave (Macedonia). *Geomorphology*, 315(2018) 80-90.
- Koltai G., Spötl C., Shen C-C., Wu C-C., Rao Z., **Palcsu L.**, Kele S., Surányi G., Bárány-Kevei I.: A penultimate glacial climate record from southern Hungary, *Journal of Quaternary Science* (2017) ISSN 0267-8179. DOI: 10.1002/jqs.2968.
- F. Italiano, B.M. Kis, C. Baciú, A. Ionescu, S. Harangi, **L. Palcsu**: Geochemistry of dissolved gases from the Eastern Carpathians - Transylvanian Basin boundary, *Chemical Geology* 469 (2017) 117–128.
- R. Saadi, Túri M., **Palcsu L.**, H. Merah, O. Keltoum Hakam, Rinyu L., Molnár M., Futó I.: A potential groundwater aquifer for palaeoclimate reconstruction: Turonian aquifer, Tadla basin, Morocco. *Journal of African Earth Science* 132 (2017) 64–71.
- Miller J.A., Dunford A.J., Swana K.A., **Palcsu L.**, Butler M., Clarke C.E.: Stable isotope and noble gas constraints on the source and residence time of spring water from the Table Mountain Group Aquifer, Paarl, South Africa and implications for large scale abstraction. *Journal of Hydrology* 551 (2017) 100–115.
- Lili Shao, Lide Tian, Zhongyin Cai, Jiangpeng Cui, Dayun Zhu, Yanhui Chen, László **Palcsu**: Driver of the interannual variations of isotope in ice core from the middle of Tibetan Plateau, *Atmospheric Research* 188 (2017) 48–54.
- L. Palcsu**, G. Koltai, A. Horváth, I. Baran, A. Baran, S. Hałas: Stable isotope and noble gas constraints on the genesis of therapeutic waters in Southeast Poland. *Carpathian Journal of Earth and Environmental Sciences*, 12 (2017) 225–233.
- Túri M., **Palcsu L.**, Papp L., Horváth A., Futó I., Molnár M., Rinyu L., Janovics R., Braun M., Hubay K., Kis B.M., Koltai G.: Isotope characteristics of the water and sediment in volcanic lake Saint Ana, East-Carpathians, Romania. *Carpathian Journal of Earth and Environmental Sciences*, 11 (2016), 475-484.
- Szűcs P., Kompár L., **Palcsu L.**, Deák J.: Estimation of the groundwater replenishment change at a Hungarian recharge area. *Carpathian Journal of Earth and Environmental Sciences* 10 (2015) 227-236.
- Kéri M., **Palcsu L.**, Túri M., Heim E., Czébély A., Novák L., Bányász I.: ^{13}C NMR analysis of cellulose samples from different preparation methods. *Cellulose* 22 (2015) 2211-2220.
- Czuppon Gy., Ramsay R.R., Özgenc I., Demény A., Gwalani L.G., Rogers K., Eves A., Papp L., **Palcsu L.**, Berkesi M., Downes P.J., Stable (H, O, C) and noble gas (He and Ar) isotopic compositions from calcite and fluorite in the Speewah Dome, Kimberly Region, Western Australia: implications for the conditions of

crystallization and evidence for the influence of crustal-mantle fluid mixing, *Mineralogy and Petrology*, 108 (2014), 759-775.

Sengupta, S., Sracek, O., Jean, J.S., Lu H.Y., Wang C.H., **Palcsu, L.**, Jen C.H., Battacharya, P., (2014): Spatial variation of groundwater arsenic distribution in the Chianan Plain, SW Taiwan: Role of local hydrogeological factors and geothermal sources, *Journal of Hydrology*, 518, 393-409.

Palcsu L., Vető I., Futó I., Vodila G., Papp L., Major Z.: In-reservoir mixing of mantle derived CO₂ and metasedimentary CH₄-N₂ fluids - Noble gas and stable isotope study of two multistacked fields (Pannonian Basin System, W-Hungary). *Marine and Petroleum Geology*, 54 (2014), 216-227.

Janovics R., Bihari Á., Papp L., Dezső Z., Major Z., Sárkány K.E., Bujtás T., Veres M., **Palcsu L.**: Monitoring of tritium, ⁶⁰Co and ¹³⁷Cs in the vicinity of the warm water outlet of The Paks Nuclear Power Plant, Hungary. *Journal of Environmental Radioactivity*, 128 (2014) 20-26.

Povinec P., Aoyama M., Biddulph D., Breier R., Bruesseler K., Chang C.C., Golser R., Hou X.L., Jeskovsky M., Jull A.J.T., Kaizer R., Nakano M., Nies H., **Palcsu L.**, Papp L., Pham M.K., Steier P., Zhang L.Y.: Cesium, iodine and tritium in NW Pacific waters - a comparison of the Fukushima impact with global fallout. *Biogeosciences*, 10, (2013) 5481-5496.

Szőcs T., Rman N., Süveges M., **Palcsu L.**, Tóth Gy.: The application of isotope and chemical analyses in managing transboundary groundwater resources. *Applied Geochemistry*, 32, (2013) 95-107,

Papp L., **Palcsu L.**, Major Z., Rinyu L., Tóth I.: A mass spectrometric line for tritium analysis of water and noble gas measurements from different water amounts in the range of microlitres and millilitres. *Isotopes in Environmental and Health Studies*, 48 (2012) 1:494-511.

Vodila G., **Palcsu L.**, Futó I., Szántó Zs.: *A 9-year record of stable isotope ratios of precipitation in Eastern Hungary: Implications on isotope hydrology and regional palaeoclimatology.* *Journal of Hydrology* **400** (2011)144-153.

Varsányi I, **Palcsu L.** Ó-Kovács L: *Groundwater flow system as an archive of palaeotemperature: Noble gas, radiocarbon, stable isotope and geochemical study in the Pannonian Basin, Hungary.* *Applied Geochemistry*, **26** (2011) 91-104.

Köllő Z., **Palcsu L.**, Major Z., Papp L., Molnár M., Ranga T., Dombóvári P., Manga L.: *Experimental investigation and modelling of tritium washout by precipitation in the area of the nuclear power plant of Paks, Hungary.* *Journal of Environmental Radioactivity* **102** (2011) 1:53-59.

Palcsu L., Major Z., Köllő Z., Papp L.: *Using an ultrapure 4He spike in tritium measurements of environmental water samples by the 3He-ingrowth method.* *Rapid Communications in Mass Spectrometry* **24** (2010) 698-704.

Palcsu L., Molnár M., Major Z., Svingor É., Veres M., Barnabás I., Kapitány S.: *Detection of tritium and alpha decaying radionuclides in L/ILW by measurements of helium isotopes.* *Journal of Radioanalytical and Nuclear Chemistry* **286** (2010) 2:483-487.

Aeschbach-Hertig W, El-Gamal H., Wieser M., **Palcsu L.**: *Modeling excess air and degassing in groundwater by equilibrium partitioning with a gas phase,* *Water Resources Research*, **44** (2008) 449-461.