

## CV of Dr. G. NIKOLAOU

He holds a B.Sc. in Physics from University of London (UK) (1978), a Ph.D. in Nuclear Sciences from University of Surrey (UK) (1983) (title of thesis: *In-vivo methods of analysis in the study of the composition of the body*) and an MBA from University of Sunderland (UK) (2001) (title of dissertation: *Service provisions by a research organisation*). He speaks Greek, English, Italian, French and German.

From 1985 till 1986 he was a postdoctoral fellow at the University of Surrey. From 1986 till 1999 he worked at the Joint Research Centre-JRC of the European Commission as a postdoctoral fellow (JRC/Ispra-Italy, 1986-1989), as a Visiting Research Scientist (JRC/Karlsruhe-Germany, 1989-1990) and as a Researcher (JRC/Karlsruhe-Germany, 1990-1999).

Then he collaborated with the National Centre for Scientific Research 'Democritus' on technology transfer (1999-2004), with the Greek Organisation for Standardisation on quality assurance ISO (2000-2003) and with the Central Research Institute of Electric Power Industry Japan (2000-2004) on nuclear technology.

Currently, he is Associate Professor in Nuclear Technology at the Department of Electrical & Computer Engineering of Demokritus University of Thrace (Greece), while between 2004 and 2010 he was Assistant Professor. Since 11/2006 he has been responsible of the Nuclear Technology Laboratory.

His scientific interests are:

- Emerging nuclear fuel cycles/reactor safety
- Nuclear waste management
- Nuclear safeguards
- Dosimetry-Radiation protection
- Metrology of nuclear radiations
- Environmental radioactivity
- Non-destructive testing.

He has collaborated with international organizations, nuclear industry, universities and research centers in Europe and Japan in the frame of R&D and basic research. Within this frame he has managed about 15 programmes.

He is the author of about 80 scientific articles in peer reviewed journals and international conferences, with 380 citations, and 1 book. He has supervised about 25 dissertations at undergraduate and postgraduate levels.

He is reviewer in: Annals of Nuclear Energy, Journal of Physics D: Applied Physics, Journal of Environmental Radioactivity, Radiation Measurements, Journal of Radiological Protection, Nuclear Instruments and Methods in Physics Research A.

He is member of the European Nuclear Society, the Board of the Greek Atomic Energy Commission and the Executive Committee of Fusion for Energy (F4E). He has represented JRC/ITU European Commission in technical committees of the International Atomic Energy Agency IAEA, and has been member of the Steering Committee of the Contract Association between the European Atomic Energy Community and the Hellenic Republic, European Safeguards Research and Development Association-ESARDA, European Network on Quality of Radioactive Waste Packages, Advisory Board JRC-Alumni Forum -European Commission.

## Publications

80 in international journals and conferences. *Selective publications:*

- G. Nicolaou, Y.S. Khrbish, N.M. Spyrou: The effect of solid angle on the reproducibility of an experimental setup in prompt gamma-ray neutron activation analysis. *International Journal of Radiation, Applications and Instrumentation (Part A: Applied Radiation and Isotopes)*, 37 (1986) 1219-1224.
- G. Nicolaou, N.M. Spyrou, Y.S. Khrbish: The importance of the geometrical factor in nuclear activation analysis. *Journal of Radioanalytical and Nuclear Chemistry*, 114 (1987) 195-202.
- K. Kusminarto, N.M. Spyrou, G. Nicolaou: 2-D Reconstruction of elemental distribution within a sample using capture prompt gamma-rays. *Journal of Radioanalytical and Nuclear Chemistry*, 112 (1987) 57-64.
- G. Nicolaou, R. Pietra, E. Sabbioni, R. Parr: Trace element analysis in environmental and occupational health: box plot representation of elemental composition results. *The Science of the Total Environment*, 80 (1989) 164-174.
- E. Leitner, R. Weh, G. Nicolaou: A passive neutron detector for nuclear material measurement in a pilot conditioning plant. *Proceedings 15th ESARDA Symposium on Safeguards and Nuclear Material Management*, p. 319, Rome, 11th-13th May 1993.
- J. van Geel, H. E. Schmidt, Hj. Matzke, G. Nicolaou, C. O'Carroll: European research and development work on the safety of the nuclear fuel cycle. *Proceedings GLOBAL '93 Int. Conf. on Future Nuclear Systems: Emerging Fuel Cycles and Waste Disposal Options*, p.541, Seattle, USA, 12th-17th Sept. 1993.
- J. Magill, Hj. Matzke, G. Nicolaou, P. Peerani and J. van Geel: A once through scheme for weapon grade Pu disposition in LWR: proliferation and criticality aspects, *Proceedings Meeting of the Technical Committee to IAEA on the Recycling of Plutonium and Uranium in Water Reactor Fuels*, IAEA, Windmeer UK, 3-7 July 1995, p. 245-257, IAEA-TECDOC-941.
- C.T. Walker, G. Nicolaou: Transmutation of Np and Am in a fast neutron reactor; EPMA results and KORIGEN predictions for the SUPERFACT fuels, *Journal of Nuclear Materials*, 218 (1995) 129-138.
- G. Nicolaou, JP. Glatz, R. Wellum and L. Koch: Experimental nuclear data from irradiation experiments involving minor actinide containing targets and fuels, *GLOBAL '95 International Conference on Evaluation of Emerging Nuclear Fuel Cycle Systems*, OECD/NEA CEC IAEA, Versailles, France, 11-14 September 1995, p. 1655-1662.
- A. Sasahara, T. Matsumura, G. Nicolaou, JP. Glatz, E. Toscano and C. Walker: Post-irradiation experiments and computational analyses of a high burnup fuel and MOX fuel for spent fuel dry storage, *Proceedings 10th Pacific Basin Nuclear Conference*, Kobe, Japan, 20- 25 October 1996.
- J. Barrero Moreno, J. Garcia Alonso, P. Arbore, G. Nicolaou, L. Koch: Characterization of spent nuclear fuels by Ion Chromatography-Inductively Coupled Plasma Mass Spectrometry, *Journal of Analytical Atomic Spectrometry*, 11(1996) 929-935.
- K. Abbas, G. Nicolaou, D. Pellotiero, P. Schwallbach and L. Koch: Gamma spectrometry of spent fuel using a miniature CdTe detector, *Nuclear Instruments and Methods in Physics Research, A* 376 (1996) 248-253.
- K. Abbas, G. Nicolaou, P. Schwallbach and L. Koch: Gamma spectrometry on nuclear material using a CdZnTe detector, *Applied Radiation and Isotopes*, 47 (1996) 755-760.
- K. Abbas, G. Nicolaou, L. Koch: In-situ gamma spectroscopy of spent nuclear fuel using a CdTe detector, *Nuclear Instruments and Methods in Physics Research, A* 383 (1996) 601-604.

- L. Koch, JP.Glatz, G. Nicolaou: Demonstration of a closed P & T fuel cycle, GLOBAL '97 International Conference on Evaluation of Emerging Nuclear Fuel Cycle Systems, OECD/NEA CEC IAEA, Yokohama, Japan, 5-10 October 1997.
- K. Abbas, G. Nicolaou, L. Koch: Self-absorption of gamma radiation in spent nuclear fuel, *Proceedings 19th Annual ESARDA Symposium on Safeguards and Nuclear Material Management*, Montpellier, France, 13-15 May 1997, p. 437-439.
- A. Sasahara, T. Matsumura, G. Nicolaou, D. Bottomley, V. Rondinella, C.T. Walker: Post-Irradiation Examinations of MOX spent fuel for interim dry storage, GLOBAL '97 International Conference on Evaluation of Emerging Nuclear Fuel Cycle Systems, OECD/NEA CEC IAEA, Yokohama, Japan, 5-10 October 1997.
- K. Abbas, J. Morel, M. Etcheverry, G. Nicolaou: Use of miniature CdZnTe X/γ detector in nuclear safeguards: characterisation of spent nuclear fuel and uranium enrichment determination, *Nuclear Instruments and Methods in Physics Research*, A 405 (1998) 153-158.
- T. Matsumura, A. Sasahara, M. Takei, T. Takekawa, K. Kagehira, G. Nicolaou, M. Betti: Analysis of burnup credit on spent fuel transport/ storage casks- estimation of reactivity bias-, *Proceedings 12th International Conference on Packaging and Transportation of Radioactive Materials (PATRAM 12)*, IAEA/COGEMA/USA DoE, Paris, 10-15 May 1998.
- J.M. Barrero Moreno, M. Betti, G. Nicolaou: Determination of the isotopic composition of caesium in nuclear samples by Ion-Chromatography Inductively Coupled Plasma Mass Spectrometry and Isotope Dilution Analysis, *Journal of Analytical Atomic Spectrometry*, 14 (1999) 875-879.
- T. Matsumura, A. Sasahara, G. Nicolaou and D. Pellottiero: Neutron/Gamma ray source measurement and analyses of high burnup UO<sub>2</sub>/MOX fuel rods, 9<sup>th</sup> International Conference on Radiation Shielding, Atomic Energy Society of Japan, Ibaraki, Japan, 17-22 October 1999.
- S. Pilate, Th. Maldague, R. Jacqmin, Ch. Chabert, S. van Winckel, Ch. De Raedt, J.C. Kuijper, G. Nicolaou, A. Ventura: Nuclear Data for Advanced MOX Fuels, EUR-19126 (2000).
- G. Nicolaou, N. Tsagas: Multivariate Statistics in the Identification of Unknown Nuclear Material, International Conference on Isotopes in Environmental Studies, IAEA, Monre-Carlo, 24-28 October 2004.
- A. Sasahara, T. Matsumura, G. Nicolaou: Neutron and gamma ray source evaluation of LWR high burn-up UO<sub>2</sub> and MOX spent, *Journal of Nuclear Sciences and Technology*, 41 (2004), p. 448-456.
- G. Nicolaou: Absolute Measurement of Radioactivity of a Volumetric Object by Collimated Detectors: Solid Angle Issues', *Journal of Radiation Measurements*, 41 (2) (2006), p. 213-216.
- G. Nicolaou: Determination of the origin of unknown irradiated nuclear fuel, *Journal of Environmental Radioactivity*, 86 (3) (2006), p. 313-318.
- G. Nicolaou, N. Tsagas: Criticality safety of spent nuclear fuel assemblies from the transmutation of minor actinides in fast reactors, *Annals of Nuclear Energy*, 33 (2006), p. 305-309.
- F. Florou, G. Trabidou, G. Nicolaou: Radiological impact assessment in some areas of elevated natural radioactivity in Greece, *Journal of Environmental Radioactivity*, 93 (2007), p. 74-83.
- J. Fantidis, G. Nicolaou, N. F. Tsagas: Localisation and distribution of radioactivity in soil: solid angle issue. International Conference on Environmental Radioactivity Measurements, IAEA, Vienna, 23-27 April 2007.

- I. Seftelis, G. Nicolaou, S. Trasanidis, N. Tsagas: Diurnal variation of radon and its progeny. *Journal of Environmental Radioactivity*, 97 (2007), p. 116-123.
- I. Seftelis, G. Nicolaou, N. Tsagas: A mathematical description of the diurnal variation of radon progeny. *Applied Radiation and Isotopes*, 66 (2008), p. 75-79.
- A. Sasahara, T. Matsumura, G. Nicolaou, Y. Kiyonagi: Chemical Isotopic Analysis of Fission Products in PWR-MOX Spent Fuels and Computational Evaluation Using JENDL, ENDF/B, JEF, and JEFF. *Journal of Nuclear Sciences and Technology*, 45 (2008), p. 390–401.
- A. Sasahara, T. Matsumura, G. Nicolaou, Y. Kiyonagi: Isotopic Analysis of Actinides and Fission Products in PWR High-Burnup UO<sub>2</sub> Spent Fuels and its Comparison with Nuclide Composition Calculated Using JENDL, ENDF/B, JEF and JEFF. *Journal of Nuclear Sciences and Technology*, 45 (2008), p. 313–327.
- G. Nicolaou: Provenance of unknown plutonium material. *Journal of Environmental Radioactivity*, 99 (2008), p. 1708-1710.
- J. Fantidis, G. Nicolaou, N. F. Tsagas: A Monte Carlo simulation of neutron activation analysis of bulk objects. *Radiation Measurements* 44 (2009) p. 273–277.
- G. Nicolaou: The diurnal monitoring of the air radioactivity using portable instrumentation. *Journal of Radioanalytical and Nuclear Chemistry*, 280 (2009) p. 451-455.
- G. Nicolaou: Identification of unknown irradiated nuclear fuel through its fission product content. *Journal of Radioanalytical and Nuclear Chemistry*, 279 (2009) p. 503–508.
- J. Fantidis, G. Nicolaou, N. F. Tsagas: A transportable neutron radiography system based on a SbBe neutron source. *Nuclear Instruments and Methods in Physics Research A* 606 (2009) p. 806-810.
- G. Nicolaou: Relative radiological impact from a reactor accident in the case of emerging nuclear fuels. *Health Physics Journal*, 97 (2009) p. 157-162.
- G. Nicolaou: Core neutronic parameters of nuclear power reactors in the case of emerging nuclear fuels. *Annals of Nuclear Energy* 37 (2010) p. 285-288.
- J. Fantidis, G. Nicolaou, N. F. Tsagas: A transportable neutron radiography system. Accepted for publication in *Journal of Radioanalytical and Nuclear Chemistry*, 284 (2010) p. 479–484.
- J. Fantidis, G. Nicolaou, N. F. Tsagas: Optimization study of a transportable neutron radiography unit based on a compact neutron generator *Nuclear Instruments and Methods in Physics Research A* 618 (2010) p. 331–335.
- H. Florou, G. Nicolaou, N. Evangeliou: The concentration of <sup>137</sup>Cs in the surface of the Greek marine environment. *Journal of Environmental Radioactivity* 101 (2010) p. 654-657.

## Patents

- J. Magill, HJ. Matzke, G. Nicolaou, P. Peerani and J. van Geel, ‘A method for the destruction of plutonium by irradiation in LWR’, EP 0836740 (granted 2/2/2000), US 5966418 (granted 12/10/99).
- G. Nicolaou, K. Abbas and L. Koch, ‘A monitor for the in-situ measurement of gamma radiation and neutrons emitted by a spent nuclear fuel assembly’, EP 0888621 (granted 15/10/1996), US 6035010 (granted 7/3/2000).