europass Curriculum vitae

PERSONAL INFORMATION

Fabio Marzaioli

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WORK EXPERIENCE

21/12/2010–Present

College / university teaching professional

Università della Campania Luigi Vanvitelli, Caserta (Italy)

University Researcher in Applied physics to the study of Cultural and Environmental Heritage, Biology and Medicine (SSD FIS/07), professorship license for the 02/B3 Italian sector from 04/04/2017 to 04/04/2023.

01/06/2010

Scientific collaboration contract at the Environmental Sciences Department (01/06/2010 to 01/09/2010) (Via Vivaldi, 43 81100 Caserta Italy) titled: “Study of carbon turnover times on soils from the Garigliano Nuclear Power Plant”.

Seconda Università degli Studi di Napoli-Dipartimento di Scienze Ambientali, Caserta (Italy)

01/05/2010

Teaching at the IFTS (Technician Vocational Training Institute) c/o ITIS RIGHI VII, V.le Kennedy, 112 80125 Naples. Co-teacher of the Environmental physics (40 hours module) course on the production and rational use of the energy by means of conventional and renewable sources and the Chemical/physical techniques for environmental analyses on the application of isotopic methodologies to the study of environmental processes.

Seconda Università degli Studi di Napoli - Dipartimento di Scienze Ambientali, Caserta (Italy)

01/2009

University Excellence research postdoctoral fellowship (18 months renewal 02/01/2009 to 02/06/2010) at the Environmental Sciences Department (Via Vivaldi, 43 81100 Caserta Italy) titled: “Study of the soil organic matter turnover time by means of the bomb-spike method”.

Seconda Università degli Studi di Napoli- Dipartimento di Scienze Ambientali, Caserta (Italy)

- The optimization of the zinc reduction method for the AMS 14C measurement in terms of observed isotopic fractionation and ion source current yields .
- The optimization of the already tested bulk soil fractionation procedure aiming to better match the observed ditribution of the oldest fractions of the Trumbore like fractionation scheme.
- The development of the application of the Montecarlo method to the C inputs extraction for the numerical resolution of the bomb-spike models also at seasonal (tree months) time steps.

03/2008

Teaching at the IFTS (Technician Vocational Training Institute) c/o ITIS RIGHI VII, V.le Kennedy, 112 80125 Naples. Co-teacher of the Environmental physics (40 hours module) course on the production and rational use of the energy by means of conventional and renewable sources and the Chemical/physical techniques for environmental analyses on the application of isotopic methodologies to the study of environmental processes.

Seconda Università di Napoli-Dipartimento di Scienze Ambientali, Caserta (Italy)

05/2007 University Excellence research postdoctoral fellowship (18 months renewal since 16/05/2007 to 15/11/2008) at the Environmental Sciences Department (Via Vivaldi, 43 81100 Caserta Italy) titled: “Study of the soil organic matter turnover time by means of the bomb-spike method”.

Seconda Università degli Studi di Napoli- Dipartimento di Scienze Ambientali, Caseerta (Italy)

- The characterization of some of the most used soil fractionation procedures by means of the ultrasensitive 14C measurements with the aim to propose and characterize an innovative fractionation procedure.
- The comparison between two solving approaches (i.e numerical and derivative) to the bomb-spike model resolution assuming a constant input scenario over the whole soil history at annual time steps.
- The development of an innovative 14C AMS target production line by means of the Zinc method.

03/2007 Tutoring activity (supervisor of the physics laboratory classes for 20 hours) at the Environmental Sciences/Biotechnology Faculty (via Viavaldi 43, 81100 Caserta).

Seconda Università delgi Studi di Napoli- Facoltà di Scienze Ambientali, Caserta (Italy)

03/2006 Tutoring activity (supervisor of the environmental physics laboratory classes for 20 hours) at the Environmental Sciences Faculty (via Viavaldi 43, 81100 Caserta).

Seconda Università degli Studi di Napoli- Facoltà di Scienze Ambientali, Caserta (Italy)

03/2005 Tutoring activity (supervisor of the environmental physics laboratory classes for 20 hours) at the Environmental Sciences Faculty (via Viavaldi 43, 81100 Caserta).

Facoltà di Scienze Ambientali - Seconda Università degli studi di Napoli, Caserta (Italy)

02/2005 Teaching (20 hours) at the Liceo Scientifico Statale (High school) “S.Pizzi” Capua, in the framework of the “the school meet the university” event.

Dipartimento di Scienze Ambientali - Seconda Università degli Studi di Napoli, Caserta (Italy)

01/2004 Teaching at the IFTS/Form@ (Technician Vocational Training Institute) Corso Umberto I, Naples. Course on the (renewables and conventional) energy sources and the methods for the evaluation of their impact on the environment.

consorzio Form@ s.r.l., Napoli (Italy)

10/2004 Scientific collaboration contract at the Environmental Sciences Department (Via Vivaldi, 43 81100 Caserta) on remote monitoring of indoor and outdoor environments and automated feedback actions (1/10/2004 to 1/12/2004).

Seconda Università degli Studi di Napoli - Dipartimento di Scienze Ambientali, Caserta (Italy)

EDUCATION AND TRAINING

01/2007 Doctor of Philosophy in ‘Innovative Physics Methodologies Applied to the Ecological Research’ at the Second University of Naples (XIX interlink cycle) - Environmental Sciences Department (Caserta, Italy). 3 years Ph.D Thesis titled: ”Assessing Soil Organic Matter dynamics by means of 14C Bomb-Spike: a feasible tool to predict terrestrial ecosystem response to climate global changes”.

Seconda Università degli Studi di Napoli - Dipartimento di Scienze Ambientali, Caserta (Italy)

Main arguments of the thesis:
• A complete review of the methodology currently used for the application of ultrasensitive measurement of 14C to the soil organic matter (SOM) dynamics study.

• A preliminary test of an innovative methodology (i.e. numerical) for the resolution of the bomb-spike based models for the study of soil carbon dynamics.
• The optimization and the characterization of the Zinc target production process for the Accelerator Mass Spectrometry (AMS) measurements of 14C on organic samples.

• The study of the temperature sensitivity of different SOM pools by means of radiocarbon measurements. This study was conducted at the Earth System Science Department UCI (Irvine, California US) in collaboration with professor Susan Trumbore.

• The study of the responses of the litter layers in terms of C turnover times to the predicted increase of summer drought stress in the Mediterranean basin.

23/09/2003

Environmental Sciences Degree at the Second University of Naples (SUN), Faculty of Environmental Sciences (via Vivaldi, 43, 81100 Caserta, Italy), with full marks cum laude. Degree thesis titled: “AMS application to the Carbon Cycle Assessment”.

Seconda Università degli Studi di Napoli- Enivronmental Sciences Faculty, Caserta (Italy)

This work was developed with short term measurement periods at the Tandemtron Laboratorium of the Ruhr Universitaet (Bochum, Germany) and allowed the historical reconstruction of the CO2 enrichment due to a natural fossil vent on the local atmosphere of an experimental site studied for the prediction of the responses of the vegetal community to the future increased CO2 concentrations.

07/1995

High School Diploma at the Istituto Tecnico per Geometri (Surveyor Technical high school) viale Michelangelo Buonarroti, 81100 – Caserta, Italy.

Istituto Tecnico Statale per Geometri "M. Buonarroti", Caserta (Italy)

PERSONAL SKILLS

Mother tongue(s): Italian

Foreign language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C2	C1	C1	C2

Levels: A1 and A2: Basic user - B1 and B2: Independent user - C1 and C2: Proficient user
Common European Framework of Reference for Languages

Organisational / managerial skills

- Local responsible of different Research Units for Isotope Research.
- Head of the Mass Spectrometry section at CIRCE Lab (AMS, IRMS, ICPMS and Isotope Chemistry Lab).
- Winner of the best oral presentation for the annual congress SIF (Italian Physics Society) 2010 session of physics applied to cultural heritage.
- Participation in the European Research Council Advanced Grant nr 247349: “AFRICA GHG”
- Participation in the Italian PRIN 2010-2011 (National Interest Scientific Research project): “Climate change mitigation strategies in tree crops and forestry in Italy (CARBOTREES)” research teams.
- Association to the INFN (National Institute for Nuclear Physics) collaborating to the European Recoil separator for Nuclear Astrophysics (ERNA) and KM3NeT (KM3 Neutrino Telescope)

experiments.

- Contract responsible for the ISPRA (National Agency for the Protection of the Environment) and SUN-DMF (Second University of Naples- Department of Mathematics and Physics) in the framework of the “nitrates project” a project funded by the Italian Ministry of Agriculture and Forestry to apportion by means of isotopes different sources contributing to nitrate pollution of water tables in the Padania Plain.

Job-related skills

RESEARCH

- Long term experience on the application of isotopic techniques, particularly 14C, for the study of the processes characterizing the global C cycle.
- Experience on the application of the radiocarbon tool to the study of cultural heritages in the framework of absolute chronology determinations with particular focus on the Mortar matrices.
- Detailed knowledge of the main theories of isotope physics (i.e. mass dependent/independent fractionation processes, isotope thermometers, isotope chemistry).
- Long term experience (>8 years) on the laboratory procedures for the production of targets for the analyses of stable and radioactive isotopic ratios.
- Long term experience (>8 years) on the accelerator mass spectrometry methodology for the 14C isotopic ratios measurements.
- Long term experience in the experimental data analysis and their interpretation by means of models (conventional and newly formulated) simulating environmental processes with a specific emphasis on the isotopic applications
- Long term experience (> 6 years) in the IRMS (isotope ratio mass spectrometry) for the measurement of stable nuclides (i.e. 13C, 15N, 2H and18O) isotopic ratios in organic and inorganic samples of different origin (i.e. gaseous, solid and liquid)
- Detailed knowledge of the application of isotope methodologies to the characterization of food.

BIBLIOGRAPHYC INDEXES (SCOPUS JUNE 4th) AND PAPERS:

- 49 INDEXED PAPERS;
- 415 CITATIONS;
- 11 H-INDEX.

TEACHING:

Good approach in the conduction of both theoretical and laboratory lectures.

Good coordinating and supervising capacity of university (master of science, bachelor of science and Doctoral) degree works.

Digital skills

SELF-ASSESSMENT				
Information processing	Communication	Content creation	Safety	Problem solving
Proficient user	Proficient user	Proficient user	Independent user	Proficient user

Digital skills - Self-assessment grid