



Alessia Santucci

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WORK EXPERIENCE

ENEA www.enea.it

City: Frascati | **Country:** Italy | **Name of unit or department:** Fusion and Technology for Nuclear Safety and Security Department | **Business or sector:** Professional, scientific and technical activities

[02/09/2013 – Current] **Engineering research scientist**

List of main activities and responsibilities.

- Scientific responsible of the EUROfusion workpackage Tritium Fueling and Vacuum (WPTFV) for the development of DEMO fuel cycle
- Tritium transversal function lead of DEMO project
- Responsible of the tritium system for the SORGENTINA-RF project for the production of medical radioisotopes using 14 MeV fusion neutrons
- Member of the Ptolemy project aimed at detecting the Cosmological Relic Neutrinos
- Participation to the TRANSAT (TRANSversal Actions for Tritium) project for improving the knowledge on tritium management in fission and fusion facilities
- Task coordinator of the coolant purification system design activities for DEMO
- Task coordinator of several activities aimed at developing membrane-based technologies for tritium recovery and purification from plasma exhaust and breeding blanket
- Activities for studying tritium retention, permeation and release in JET first wall materials (Be and W) and inventory assessment
- Active contract with CSM for consultancy on hydrogen absorption properties in steels
- Activities for integrated design of HCPB and WCLL breeding blanket and ancillary systems and impact on the overall plant design
- Member of the option study for the ITER Water Detritiation System technology and process options
- Expert engineer for hydrogen to metal interaction mechanisms for EFDA-funded activities
- Assessment of tritium inventory and permeation in nuclear fusion reactors
- Analysis and risk assessment of the ITER detritiation systems through HAZOP analyses
- Investigation of manufacturing and welding techniques for metals
- Design and development of experimental facilities and prototypes mainly for membrane-based technologies and associated vacuum systems and components
- Reference person for the ENEA Frascati membrane laboratory, including formulation of new proposals, safety responsibility, contract and procurement management and relations with suppliers

CREATE Consortium <https://create.unina.it>

City: Naples | **Country:** Italy | **Business or sector:** Professional, scientific and technical activities

[01/06/2012 – 31/07/2013] **Research engineer**

List of main activities and responsibilities.

- Technical consultant for plant and fuel cycle design of nuclear fusion reactors
- Risk assessment analysis for ITER tritium plant systems

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City: Frascati | **Country:** Italy

[18/05/2009 – 17/05/2012] **TRI-TOFFY Trainee**

List of main activities and responsibilities.

- R&D on thin wall Pd-based membranes for processes of tritium recovery from test blanket modules and final clean-up plasma exhaust of ITER
- Activities at the Tritium Laboratory of Karlsruhe (KIT): participation at CAPER (CAlytic purification and PERmeator catalyst) operation, use of tritium analytics, procedure of tritium transfer from the storage system of TLK, participation in experiments with the Water Detritiation System and Isotope Separation System and analysis of experimental samples by using different analytical techniques
- Training at JET facilities by participating in different operational procedures during experimental campaign with the various working fields at JET. gas handling, analytics

EDUCATION AND TRAINING

[01/01/2007 – 06/07/2012] **PhD in Material Science and Environment**

University of Rome Tor Vergata <https://web.uniroma2.it/>

City: Rome | **Country:** Italy | | **Level in EQF:** EQF level 8

[01/09/2000 – 02/05/2006] **Master Degree in Environmental Engineering**

University of Rome Tor Vergata <https://web.uniroma2.it/>

City: Rome | **Country:** Italy | | **Level in EQF:** EQF level 7

LANGUAGE SKILLS

Mother tongue(s): Italian

Other language(s):

English

LISTENING C1 READING C2 WRITING C2

SPOKEN PRODUCTION C1 SPOKEN INTERACTION C1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

PUBLICATIONS

Author of 130 publications on ISI scientific journals, 2 Chapters in scientific books and 3 patents. Scopus h-index = 31 (February 2026)

CONFERENCES AND SEMINARS

More than 15 conferences on Nuclear Fusion Science and Technologies