

CURRICULUM VITAE

Name: Massimo ZUCCHETTI

Born: Torino (ITALY), 11/11/1961

Civil Status: Married, one child

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Spoken Languages

- Italian (mother tongue)
- English (Fluent)
- French (Minimal Knowledge)
- Spanish (Working Knowledge)

Studies

- **May 1986:** Degree in Nuclear Engineering, Politechnical University of Engineering (POLITO), Torino (Italy). Rank: "110/110 e lode", i.e., Maximum degree cum laude.
- **December 1990:** Doctorate in Energetics (Dottorato di Ricerca in Energetica), Italian Ministry of University, Scientific and Technical Research, Roma (Italy). Doctorate Thesis: "Neutron-Induced Radioactivity in Fusion Reactors".

Career

- **1986-1987:** Team Engineer at the AERITALIA aerospace industry, Torino (Italy).
- **1987-1989:** Grant holder and Doctorate student at POLITO.
- **1988-1990:** Stager at the Joint Research Centre (JRC) of the European Communities at Ispra (Italy). Stage arguments : Fusion neutronics, Activation analyses, Low-activation materials.
- **1990-1998:** Assistant professor at POLITO.
- **1998-2002:** Associate Professor at POLITO
- **From 1999:** Coordinator of the IEA Co-operative Program on the Environmental, Safety and Economic Aspects of Fusion Power, Task 6: Fusion Radioactive Waste Study
- **From 1999:** Head of a research group on fusion technology, officially recognised by an Agreement between ENEA and POLITO (ENEA/EURATOM Association). Principal investigator of several Technology Tasks Milestones in the European Long-Term Fusion Program, concerning fusion safety and waste management issues.
- **From 2002:** Full Professor at POLITO. Chair (*Chatedra*) of "Safety and Risk Analysis". Third youngest full professor at POLITO and in the youngest one per cent of full professors in Italy.
- **From 2005:** Research Affiliate at MIT (Massachusetts Institute of Technology) – USA.
- **Referee** of the International Journals "Fusion Engineering and Design", "Journal of Nuclear Materials", "Fusion Science and Technology".
- **Coordinator/main investigator** – in the period 1990-2007 – of research contracts and activities financed for a total amount of about €1.000.000.
- **Vice-president** of MESAEP (Mediterranean Scientific Ass. for Environmental Protection)
- **Advisor** of the Italian Republic Senate on the question of depleted uranium
- **Co-Editor** in the international "Journal of Environmental Protection and Ecology"

Scientific Research Areas/ Scientific Skills/ Competencies

Scientific Research Areas

- **FUSION TECHNOLOGY.** Radioactive safety. Risk analysis. Radioactive waste management. Nuclear activation analyses. Fusion neutronics. Low-activation materials. Blanket design. Safety and technology of liquid metals for nuclear reactors.
- **ENVIRONMENTAL IMPACT OF NUCLEAR TECHNOLOGIES..** Decommissioning of Nuclear Power Plants. Radiation protection and shielding. Depleted uranium.

Scientific Skills

- Programming in Fortran, Pascal, Basic. Experimental laboratory experience, validation of computer codes and models, including related experiments
- Use of fusion safety and environmental impact codes: GEN II, FISPACT/EASY, MCNP, MICROSIELD, RESRAD

Teaching activity at POLITO

Professor of the course “Safety of Nuclear Power Plants” since 1994. Full professor, Chair of the course “Safety and Risk Analysis” since 2002. Professor of “Radiation protection” since 2003.

International and National Collaborations

- NET Team/ITER Home Team/EFDA - Garching (Germany): NET and ITER Safety Analysis, Activation calculations and waste management in the SEAFP-SEAFP2-WMS-PPCS projects.
- CEA-Saclay (France), ENEA (Brasimone): Neutronic Optimisation and Analysis of a DEMO Pb16Li Blanket. Safety and technology of liquid metal blankets (WCLL, HCLL) for ITER and DEMO.
- MIT - Cambridge (USA), ENEA (Italy): Activation and Safety Analysis of the IGNITOR project.
- ENEA (Frascati). ITER, SEAFP, PPCS, DEMO: several technology and safety tasks .
- *Instituto de Fusion Nuclear*, Polytechnic of Madrid (Spain): ERASMUS Visiting Professor.
- Technical Universities of Thessaloniki and Patras (Greece): ERASMUS Visiting Professor.

Invited and Oral Presentations at International Meetings, Conferences and Workshops

Massimo Zucchetti gave oral and poster presentations – either invited or contributed – in all the main conferences and meetings in the field of Fusion Technology (SOFT, ISFNT, ICFRM, SOFE, IAEA Meetings, etc.) and in other Conferences/Meetings in the field of Nuclear Technology, since 1988 through 2007. They may be summarised as follows: about 30 invited and oral presentations, about 60 poster presentations, in a total of about 70 conferences and meetings, mostly international ones. A complete list is available upon request. He gave about 50 talks in the field of fusion and nuclear safety and technology in Italy, Germany, France, Greece, Spain in the last ten years.

Publications from International Journals and Conferences

Publications by M.Zucchetti have collected about 300 quotations on international journals and conferences in the period 1990-2007 (list omitted).

Massimo Zucchetti is author or co-author of more than 200 publications: in particular, 80 papers on international journals, 39 papers on proceedings of international conferences with referee, 28 papers on national journals, 3 books, 10 reports of international diffusion, etc.

List of publications is omitted: only 5 main papers dating from the nineties and some most recent papers are listed hereunder.

- M.Zucchetti, 'Impurity concentration limits and activation in fusion reactor structural materials', *Fusion Technol.*, 19 (1991) 294
- M.Zucchetti, B.Coppi, 'Neutron induced radioactivity in a compact ignition experiment', *Fusion Technol.*, 21 (1992) 2017

- M.Zucchetti, 'Problems and results of activation calculations for experimental fusion devices', *Fusion Technol.*, 26 (1994) 1275
 - K.Brodén, M.Lindberg, S.Nisan, P.Rocco, M.Zucchetti, N.Taylor, C.Forty, 'Management of Waste from ITER and from future fusion power plants', *Fus. Eng. and Des.* 36 (1997) 356.
 - P.Rocco, M.Zucchetti, 'Recycling and clearance of fusion activated waste', *J. Nucl. Mater.*, 233-237 (1996) 1500
1. M.Zucchetti, A.Ciampichetti, 'Fusion Reactor Radioactive Materials and National Waste Management Regulations', *Journ. Nucl. Mater.* 329-333 (2004) 1653-1658.
 2. A.Ciampichetti, I.Ricapito, G.Benamati, M. Zucchetti, 'Materials selection and design of a hydrogen measurement device in Pb-17Li', *Journ. Nucl. Mater.* 329-333 (2004) 1332-1336.
 3. I. Antonaci, M. Zucchetti, A. Ciampichetti "Radioactive Waste Management And Safety For The Ignitor Fusion Experiment", *Fus. Eng. Des.* 75-79 (2005) 1237-1241
 4. M. Zucchetti, "The Zero-Waste Option For Nuclear Fusion Reactors: Advanced Fuel Cycles and Clearance of Radioactive Materials", *Annals of Nuclear Energy* 32/14 (2005) 1584-1593.
 5. M. Zucchetti, "Environmental Pollution and Population Health Effects in the Quirra Area, Sardinia Island (Italy) and the Depleted Uranium Case", *J. Env. Prot. And Ecology* 1, 7 (2006) 82-92.
 6. M. Zucchetti, F.Aumento "Accidents in nuclear powered submarines and their effects on environmental marine pollution", *J. Env. Prot. And Ecology* 1, 7 (2006) 176-185.
 7. F. Aumento, M. Cristaldi, M. Zucchetti "Nuclear Powered Submarines as Hazards For The Marine Environment", *Fresenius Env. Bull.* 15/9A (2006) 1068-1075.
 8. R. Chiarelli, M. Zucchetti 'Environmental impact of radioactive releases due to Trino Vercellese Nuclear Power Plant decommissioning', *International Journal of Nuclear Governance, Economy and Ecology* 1,2 (2006) 222-227.
 9. M. Zucchetti 'Doses due to contamination of the Techa river by the Mayak nuclear complex in Russia', *J. Env. Prot. And Ecology* 7,4 (2006) 918-925.
 10. M. Zucchetti, L. El-Guebaly, R.A. Forrest, T.D. Marshall, N.P. Taylor, K. Tobita, 'The Feasibility of Recycling and Clearance of Active Materials from a Fusion Power Plant', *Jour. Nucl. Mater.* 367-370 (2007) 1355-1360
 11. S.A. Bartenev , A. Ciampichetti , B.N. Kolbasov , I.B. Kvasnitskij, P.V. Romanov, V.N. Romanovskij, M. Zucchetti, 'Recycling of Vanadium Alloys in Fusion Reactors', *Jour. Nucl. Mater.* 367-370 (2007) 892-896
 12. A. Ciampichetti, M. Zucchetti, I. Ricapito, M. Utili, A. Aiello, G. Benamati', 'Performance of a hydrogen sensor in Pb-16Li', *Jour. Nucl. Mater.* 367-370 (2007) 1090-1095.
 13. L. El-Guebaly, R. Pampin, M. Zucchetti, 'Clearance Considerations for Slightly-Irradiated Components of Fusion Power Plants', *Nuclear Fusion* 47 (2007) S480-S484.
 14. M. Zucchetti, S. A. Bartenev, A. Ciampichetti, R. Forrest, B. N. Kolbasov , P.V. Romanov , V.N. Romanovskij 'A Zero-Waste Option: Recycling and Clearance of Activated Vanadium Alloys', *Nuclear Fusion* 47 (2007) S477-S479.
 15. M. Zucchetti, G.. Cambi, D. Ceperaga, A. Ciampichetti, 'Neutronics, activation and waste management of the Candor experiment' *Annals of Nuclear Energy* 34 (2007) 687-692
 16. L. El-Guebaly, M. Zucchetti, 'Recent Developments in Environmental Aspects of D-3He Fuelled Fusion Devices', *Fus. Eng. And Des* 82 (2007) 351-361