

Personal details

Surname: Fontana *Name:* Danilo

Organization and Position: ENEA (National Agency for New technologies, Energy and sustainable economic development), Senior Research Scientist

Education and training: Graduated in Industrial Chemistry (Chemistry Department of Rome, University "La Sapienza") 1992. Thesis Title: "Decomposition Pressure and Standard Enthalpies of Sublimation and of Formation of Iron Monoselenide".

Professional experience

His main interests are in the area of the Separation Chemistry, as senior researcher of "Technologies for waste, water and raw materials management laboratory" within the "Division for Resource Efficiency" of the Department for Sustainability he coordinates R&D activities in the field of the eco-innovation of industrial processes, process technologies development and implementation for the recovery and purification of raw materials and water, design and management of pilot plants with particular regard to hydrometallurgical technologies.

He has been coordinating experimental activities within several national and international projects and have gained experience on project proposal development and project management in the environmental field.

He is currently coordinating the R&D activities regarding the recovery of critical and/or valuable raw materials from special categories of waste (WEEE, Brines and Li-ion batteries).

In the framework of the European Innovation Partnership on Raw Materials (EIP RM, EU Directorate General GROWTH) he is a member of:

- Supply Group on Raw Materials (expert groups RMSG X01353)
- EIP RM Operational Groups
- SPIRE (Sust. Process Industry Trough Resource and Energy Efficiency) WG Resource and Process Efficiency

He has been member of:

- A.SPIRE WG WASTE2RESOURCES
- Cost Action ES1407 RECREEW (European network for innovative recovery strategies of rare earth and other critical metals from electric and electronic waste).
- European Rare Earths Competency Network (ERECON).

He is author of the patents listed below:

- HYDROMETALLURGICAL PROCESS FOR RECOVERY OF MATERIALS FROM PRINTED CIRCUIT BOARDS PCT/IB2014/065131
- GROUP FOR THE REALIZATION OF A HYDROMETALLURGICAL RECOVERY PROCESS OF MATERIALS FROM PRINTED CIRCUIT BOARDs PCT/IB2016/050763
- Method and Apparatus for the Discrimination and Identification of Plastic Samples by X-ray Selective Emission and Transmission-Absorption PCT/IB2016/054737

International projects

KIC Raw Materials framework:

- AVAR - Added Value Alumina Refining (Up-scaling project, Lead Aughinish/Rusal, Partner, scientific referent for ENEA)
- PCRec - Product Centric Recycling (Network of Infrastructure, Lead ENEA, Project member)
- RefresCO - Professional refresher COurses (Lifelong education project, Lead ENEA, Project member)
- eWaste (Cross KIC project Digital, Climate and Raw Materials, Project member)
- Resielp (Recovery of Silicon and other materials from End-of-Life Photovoltaic Panels, Project member)
- Display (Upscale of Material Recovery from Display Applications and Printed Circuit Boards, Project member)

Horizon 2020:

- SCRREEN (Solutions for Critical Raw materials - a European Expert Network) Project member, Task Referent.

National projects

- "Ricerca di Sistema Elettrico" (PAR MISE-ENEA 2014/2015): Rifiuti da apparecchiature Elettriche ed Elettroniche (WEEE) funded by the Italian Ministry of Economic Development, WP Coordinator.
- "Ecoinnovazione Sicilia project: tecnologie di recupero materie prime e gestione integrata dei RAEE". Coordinator WP1 task 1
- Agreement ENEA-Italian Ministry of Environment about waste valorization, scientific referent,
- ATELIER (2019-2020), funded by Unioncamere Lombardia, to promote of the circular economy (EC) in Lombardy (Italy) with dedicated training courses, project partner.
- The Italian Phosphorus Platform (2019-2020) – coordinating the "Market" working group to reach national self-sufficiency in the Italian phosphorus supply with a circular approach, funded by the Italian Ministry of Environment, Market" working groups partner

Peer reviewed publications and h-index

30 peer reviewed publications, citations 537, h-index 9.

5 peer-reviewed selected publications

- D. Fontana, F. Forte, M. Pietrantonio and S. Pucciarmati. Recent developments on recycling end-of-life flat panel displays: A comprehensive review focused on indium. *Crit. Rev. Env. Sci. Tec.*, (2020). <https://doi.org/10.1080/10643389.2020.1729073>.
- F. Forte, M. Pietrantonio, S. Pucciarmati, M. Puzone and D. Fontana. Lithium iron phosphate batteries recycling: An assessment of current status. *Crit. Rev. Env. Sci. Tec.*, 2020. <https://doi.org/10.1080/10643389.2020.1776053>.
- D. Fontana et al. Palladium recovery from monolithic ceramic capacitors by leaching, solvent extraction and reduction. *Journal of Material Cycles and Waste Management* (2018) 20 1199.
- D. Fontana et al. A comprehensive characterization of End-of-Life mobile phones for secondary material resources identification. *Waste Management* 99 (2019) 22–30
- Manivannan Sethurajan et Al. Recent advances on hydrometallurgical recovery of critical and precious elements from end of life electronic wastes - a review. *Critical Reviews in Environmental Science and Technology*, Volume 49, 2019 - Issue 3, 212-275.