

Curriculum vitae

A. Personal Data

D. Sc. Annukka Santasalo-Aarnio

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15.02.1982

University Teacher, 1.3.2015-

- CHEM Major: Sustainable Metals Processing
- CHEM Major: Functional Materials
- Aalto Major: Advanced Energy Solutions
- Research projects: PANBioRA and CloseLoop
- EIT RawMaterial coordinator in Aalto (2016-2017)



Department of Chemical and
Metallurgical Engineering,
Aalto University

B. Education

Doctor of Science (Tech.) 2007-2012

- Thesis: "*In and ex situ investigation of Direct Alcohol Fuel Cell anode materials*"

School of Chemical Technology,
Aalto University

Licentiate (Tech.) 2010

- Thesis: "*Electrocatalysis of organic molecules on Pt catalyst surfaces: from the fundamentals to the polymer electrolyte fuel cell applications*"

Helsinki University of Technology
(HUT)

Master of Science in Engineering 2001-2007

- Chemical Engineering (HUT)
- Major: Electrochemistry, Minor: Technical chemistry
Thesis: "*Use of liquid fuels in a polymer electrolyte fuel cell*"

Helsinki University of Technology

Secondary school graduate 2001

Helsingin normaalilyseo

Comprehensive school diploma 1998

Kruununhaan Yläaste

Pedagogical training

Aalto University

- In total 33 cr. between years 2013-2017, detailed list is in *Teaching portfolio – Appendix I*
- Teaching in Aalto University I (25 cr.) completed in May 2015

First aid training, level 1: 2003, 2010, 2015

Finnish Red Cross

Languages

Finnish: native language

English: excellent
Spanish: excellent
Swedish: good
German: beginner

C. Previous positions and mobility

- Postdoctoral Researcher**, 1.4.2013 – 30.11.2016 Department of Materials
Science and Engineering,
Aalto University
- EU project (FP7): “SOL2HY2”
 - Task leader: WP2.1, WP2.2, WP5.1, WP8.2
- Postdoctoral Researcher**, 1.1.2013 - 30.4.2013 Department of Chemistry,
Aalto University
- E-sini project (Tekes): “Flexible and intelligent Aalto University charging of electric vehicles”
- Researcher**, 1.2.2007 - 31.12.2012 Department of Chemistry,
Aalto University
- “*New anode materials for polymer electrolyte membrane fuel cell (PEMFC)*”
 - Supervisors: D.Sc. T. Kallio and Prof. K. Kontturi
- Mobility: Research Visit** 1.4-30.4.2010 Leiden University,
the Netherlands
Supervisor: Prof. M.T.M. Koper
- Mobility: Research Visit** 15.1-30.6.2008 Instituto de Electrochimica,
Universidad de Alicante,
Spain
- Supervisors: Prof. J. Feliu and
PhD. F. Vidal-Inglésias
- Master’s Thesis** 1.7.2006-31.1.2007 Laboratory of Electrochemistry,
Helsinki University of
Technology (HUT)
- Topic: “*Use of liquid fuels in a polymer electrolyte fuel cell (PEM)*”
- Research assistant** Laboratory of Electrochemistry,
HUT
- Bio fuel cell- project 15.1-15.5.2005
Rotating disc electrode, 3.5-31.7.2004
- IAESTE trainee** 4.7-26.8.2005 Universidad Politécnica de
Valencia, Spain
- Sedimentation of solid substance
- Summer trainee** 2.6-29.8.2003 Outokumpu Research Oy
- Study of cathode materials for Zinc process
 - Supervisor: PhD. Michael Barker

D. Professional activities and achievements

Reviewer tasks

- EU Horizon 2020 Framework program proposals evaluator (2016 ->)
- Electrochemistry Communications (2018 - >), 1 paper review yearly
- Journal of Catalysis (2017 ->), 1 paper review yearly
- Indian Journal of Engineering & Materials Sciences journal (2016 ->) 1 paper review yearly
- Energy Science and Engineering journal (2015 ->) 1 paper review yearly
- American Chemical Society (ACS) catalysis journal (2014 ->), 1 paper review yearly
- Energy and Power Engineering journal (2014 ->), 2-4/paper review yearly

Thesis supervision

Summary of the Theses supervision, details with topics at *Teaching Portfolio - Appendix I*

- 2 Ongoing Doctoral thesis
- 1 graduated Licentiate's thesis
- 3 graduated and 1 ongoing (March 2018) Master's theses
- 7 graduated Bachelor's theses and 1 ongoing (Spring 2018, at ENG)

Experience of leadership

- Guiding research assistants at the research groups, all together **9 students**, detailed list of employment periods and topics at *Teaching Portfolio - Appendix I*
- Development of curriculum and individual courses, details in *Teaching Portfolio*
- Participation for student Academic Advising at Bachelor's and Master's levels at 2008-2010 and 2015-2017, details at *Teaching Portfolio - Appendix I*

Inventions

M. Gasik, A. Santasalo-Aarnio and Y. Bilotsky: "The method of sulfur control in sulfur dioxide depolarized electrolytic (SDE) production of hydrogen and sulfuric acid." Aalto invention application IPID 1577 (2015).

Conference Presentations

- In total 8 **Poster Presentations** at International conferences (2007-2016)
- **Oral Presentations** presented by the applicant:
 - "Circular Economy Design Forum – A New Approach to Teaching" 45th Annual Conference of European Society for Engineering Education (SEFI), Terceira Island, Azores, Portugal, 17-21.9.2017
 - "SO₂ Depolarized Electrolyser - Enhanced H₂ production with SiC foam flow layer" 1st International Conference on Electrolysis (ICE), Copenhagen, Denmark, 12-15.6.2017
 - "New generation of sulfur dioxide depolarized electrolyzer (SDE)" FCH JU Review Days, Bruxelles, Belgium, 21.11.2016
 - "Stack flow configurations for SO₂ depolarized electrolyser (SDE)" World Hydrogen Energy Conference (WHEC), Zaragoza, Spain, 13-17.6.2016
 - "SO₂-depolarized electrolyser", SOL2HY2 training event, Rome, Italy 15.1.2015
 - "Optimization of SO₂ crossover and water transport in SO₂-depolarized electrolyser for hydrogen production" European Hydrogen Energy Conference (EHEC), Sevilla, Spain, 12-14.3.2014
 - "Methano, Ethano and Iso-Propanol Performance in Alkaline Direct Alcohol Fuel Cell (ADAFc)", 218th ECS Meeting, Las Vegas, USA, 10-15.10.2010
 - "The effect of pH to the electrooxidation of Small Alcohols on Pt-Based Catalyst Materials: an RDE and DAFC study", Luzern, Switzerland, 29.6-2.7.2009

Positions of trust

- Niilo ja Lauri Santasalo Foundation (Part of Kaute foundation - Finnish Science Foundation for Economics and Technology), Member of board 2015 ->
- Doctoral Promotion 2014 (Aalto University), member of the organizing team
- Kaskiaura housing complex (Kaskiaura Oy), Auditor 2012
- The Alumni Club for Chemists - Kklubi, president 2009-2010
- Royal Society of Chemistry, Finland, Social Secretary 2008-2009
- Student union (HUT), Leader of sports society 2006

- The Chemistry guild (HUT), 2003-2005 (hostess and PR- relations)
- Club Mañana (a club for Spanish speaking students), 2005-2007 (President)
- Helsingin normaalityö, Chief Editor of School paper Veikka, 2000
- Finnish Swimming association, Coordinator of Rollo swimming camp 1996,1997

Administrative assignments

- Participation to coordination, dissemination and knowledge management tasks within EU project "SOL2HY2" (2013-2016)
- EIT RawMaterials project support as coordinator in Aalto: applications, budgeting, reporting and assistance, 2016-2017
- Active member of Network: "Teaching sustainability in Aalto" 2016-

Public Appearances, tutorials, talks

- Aalto University representative in experts council for exhibition on "Circular Economy" at Heureka 2019, Vantaa
- Metallien valmistuksen huippusaajat Porissa 10.6.2015
 - Oral presentation (for public): "Pyrometallurgy and Thermodynamics"; for 90 people (industry, media and policy makers)
- H₂ production demonstration at CAE conference, Verona, Italy 19-20.10.2015
- Millenium-X event (Kaapelitehdas 20.5.2016), part of SOL2HY2 training
 - Demonstration project of using solar heat with chemical reactions
 - Present 1000-3000 children between 13-17 years.
- Interview in Kuluttajalehti 7/2015 on hydrogen vehicles, "Tankkaa Vihreämmin" esittely erilaista korvaavista ajoneuvoista,
- Interview in Luoteis-Lappi 2.6.2016 on what should be taken into account when planning a mine, "Yhtiö varpailleen – Aalto yliopiston opiskelijat pohtivat Hannukaisen kaivoksen haittoja ja hyötyjä opintomatallaan"
- Interview by Elker web-release on circular economy 28.6.2016 "Juttusarja kiertotaloudesta: viisas tuotesuunnittelu tehostaisi muovin kierrätystä"

External research funding

Participation to projects

- EU Horizon2020 project: **PANBioRA** "Personalised and/or generalised integrated biomaterial risk assessment" **2017-2020**
- Finnish Academy: **CloseLoop**, "Closing the Loop for High-added-value Materials" **2016-2019**
- EU-project (FP7): **SOL2HY2** "Solar to Hydrogen Hybrid Cycles" **2013-2016**

Research funding applications

- EU-project Horizon 2020: **INSOLATION** "Smart Off-Grid Electrolyzer Solar-Integrated System for Efficient Hydrogen Production" April **2018**
- EU-project Horizon 2020: **SUDEX** "Sulphur Dioxide Depolarized Electrolyser-Exchanger" April **2017**
- Tekes: Finnish – German Funding Call supporting the European Strategic Energy Technology Plan (SET-Plan) March **2017**
- EIT RawMaterials: **ProReLi** "Process Recycling of Li ion batteries" May **2016**

- Tekes "Challenge Finland" Phase I: **iSMART**: "Combating biologic complications in dental implants by a robust carbon-based smart sensor" **2016**
- EU-project Horizon 2020: **SOGESIS** "Smart Off-Grid Electrolyzer Solar-Integrated System for Efficient Hydrogen Production" August **2015**

Research funding application support

- EIT RawMaterials: **SO4control**, Scale-up of Solution for Mining water sulphate control with side-product recovery, coordinator Terrafame Oy, March **2017**
 - Funded (2018-2020), total budget 2 Me, Aalto part 120 000 e
- EIT RawMaterials: **DigiHC**, Digitalisation of hydrometallurgical chemistry, coordinator Aalto (P. Taskinen), March **2017**

Educational funding

- EIT RawMaterials: **MaSMeP**, "Material Science and Metallurgical Network Platform" Platform for the project work course at SMP major, coordinator KTH, February **2018**
 - Under review (2019-2022), total budget 262 669 e, Aalto part 58 250 e
- EIT RawMaterials: **GeoApp-ESEE**, "Dubrovnik International ESEE School of Applied Geosciences" Training innovation experts for mining industry, coordinator University of Zagreb, February **2018**
 - Under review (2019-2022), total budget 544 331 e, Aalto part 25 792 e
- SITRA funding for **Circular Economy minor** at Master's level in Finland, coordinated by Aalto (A. Santasalo), July **2017**
 - Funded (2018-2019), Total budget 132 000 e, Aalto part 30 000 e
- EIT RawMaterials: **I2A**, IDEATION 2 ACTIVATION start-up summer school, coordinator Trinity Collage Dublin, March **2017**
 - Funded (2018), total budget 200 000 e, Aalto part 67 250 e
- EIT RawMaterials: **DIENT**, Master's course for integrating entrepreneurial mind-set for material science project work courses, coordinated by Aalto (Jari Koskinen), March **2017**
 - Funded (2018-2021), total budget 570 000 e, Aalto part 235 000 e
- EIT RawMaterials: **MC-CEMP**, Master's course for introduction to circular economy, coordinated by KTH, March **2017**
 - Funded (2018-2021), total budget 590 000e, Aalto part 87 000 e

Rewards and Scholarships

- Education action of the year 2017
 - Pro Mathematica medal (2001)
 - Scholarship for ELCAT training courses, 2010
 - Travel funding (Exchange in Spain), 2008
- CHEM, Aalto University
Helsingin normaalilyseo,
High-school
Finnish Foundation for
Technology Promotion
Finnish Cultural found,

Publications

- Peer reviewed Journal Publications [List of publications] 17
- Conference publications (peer reviewed) 3
- Number of citations (Scopus, 19.4.2018) 324 (in 282 documents)
- h-index (Scopus, 19.4.2018) 10

E. Other relevant information

Hobbies and special skills

IT: Office programs, HSC 9, HSC Sim 9, Origin 8.0, GPES (Autolab), FRA (Autolab), IviumStat

Jooga, Swimming, BodyCompat and Hiking
Piano playing and singing in a Choir

I was an exchange student in Mexico at fall 2004 (6 months) in a University of Technologico de Monterrey, where I studied Spanish, Mexican culture and intercultural communication.