



## Europass Curriculum Vitae

### Personal information

First name(s) / Surname(s) **Emanoil SURDUCAN**

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Nationality Romanian

Date of birth 17.05.1956

Gender Male

### Desired employment / Occupational field

**Engineer, senior researcher on microwaves applications**

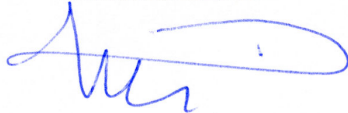
### Work experience

Dates	Sept 1985 – Oct. 1992, Oct. 1992 – Dec.1998, Dec. 1998 onwards, Dec. 2017 onwards.
Occupation or position held	CS, CS3, CS2, Director of the Research Center for Advanced Technology and Alternative Energy, CETATEA
Main activities and responsibilities	Management of the research activity in CETATEA Research Center;  Vice Chairman of the Scientific Council of INCDTIM;  Researches related to microwaves interaction with molecular and bio-molecular systems, bio-method to reduce environmental electromagnetic pollution, low power electromagnetic processing of biological systems; scientific research consultant on two (2) projects, project manager on one (1) economical project, project manager or associate manager on six (6) national research projects;  Non- conventional methods and techniques of microwave power processing - applications on molecular physics; project manager on two (2) economical and one (1) research projects  Microwaves application on: moisture measurements on ceramic and textile manufacturing process, microwave-induced plasma in surface polymers activation, thermal treatments ; project manager on two (2) economical projects, one of them finalized with homologated product.
Name and address of employer	National Institute for Research and Development of Isotopic and Molecular Technologies (INCDTIM), Department of Molecular and Biomolecular Systems, 65 - 103 Donath St., POB 700, 400293 Cluj-Napoca, România
Type of business or sector	R&D institution
Dates	October 2009 -2016
Occupation or position held	visiting professor
Main activities and responsibilities	Bio electromagnetic interaction and standards for electromagnetic exposure protection
Name and address of employer	Technical University of Cluj-Napoca, Faculty of Electronics, Telecommunications and Information Technology, 26 – 28 G. Baritiu St., 400027 Cluj-Napoca, Romania
Type of business or sector	Education
Dates	2004-2007
Occupation or position held	consultant engineer researcher
Main activities and responsibilities	consultant on microwaves antennas and radio frequencies (RF) front end design for software-defined radio (SDR) applications



Organisational skills and competences	<p>Member of the INCDTIM Scientific Council between 2002-2008;  Vice-president of the INCDTIM Scientific Council between 2004-2006;  President of the Researchers' Union Organization between 1994-1996</p> <p>Microwaves team leadership, good experience in project or team management acquired as project leader of 15 projects . Last 6 coordinated projects as team manager or associated team manager are:</p> <ul style="list-style-type: none"> <li>- Laboratory convection experiments with internal, non-contact, microwave generated heating, applied to Earth's mantle dynamics (PN-II-ID-JRP-2011-1 Romania-France), web : <a href="http://www.itim-cj.ro/bilateral/terra-mwh/index.html">http://www.itim-cj.ro/bilateral/terra-mwh/index.html</a>, principal investigators ( 2011-2015)</li> <li>- Microwaves interaction with molecular and bio-molecular systems (National CEEEX Programme) team manager (2005-2008)</li> <li>- Research related to bio-electromagnetic interactions and the correlated human impact to electromagnetic waves exposure (National CEEEX Programme) associate team manager (2005-2007)</li> <li>- Data logger microwaves detector for biological protection (National CERES Programme) team manager (2004-2006)</li> <li>- Microwaves power dynamic processing of material with device controlled by embedded system (National CERES Programme) team manager (2003-2005)</li> <li>- Implicate order experiments on microwaves resonator (CNCSIS National Grant) team manager (2002-2004)</li> </ul>
Technical skills and competences	<p>Microwave circuit design and characterization; Microwave methods for dielectric properties measurements in composite materials; Low power microwave and microwave power field distributions measurements; Microwaves power material processing applications; microwaves power plasma applications; These skills and competences were acquired through work on research projects.</p>
Computer skills and competences	<p>Good command of Microsoft Office tools; basic knowledge of graphic design applications (Adobe Illustrator, PhotoShop, IrfanView), basic knowledge of microwaves circuit design (Sonnet, Zeland 3D, Microwave Office, COMSOL), basic knowledge of mechanical design (Designer, 123Acad) , basic knowledge of CAD Tools (CircuitsCAM), basic knowledge of BASIC and C+ programming, basic knowledge of design, test and use of Brain-Computer Interfaces (OpenViBE software)</p>
Artistic skills and competences	<p>Hobbies on photography, toys design and prototyping</p>
<b>Additional information</b>	<p><b>Prizes, distinctions:</b> 17 medals (9 gold, 6 silver, 2 bronze) at international patent fairs and exhibitions</p> <ul style="list-style-type: none"> <li>-The "Procedure and device for microwave dynamic processing of materials" Patent, RO-00122063, has obtained 3 gold medals at the 35th IEINTP - Geneva, 2007, 12th IEI –INVENTIKA - Bucharest, 2007, 8th IEI-PROINVENT – Cluj Napoca, Romania, 2010</li> <li>-Second prize of the Romanian National Authority for Scientific Research (ANCS) in 2007, for the research project Cex-D11-80/2005 "Microwaves interaction with molecular and biomolecular systems"</li> </ul> <p><b>Summary of publications:</b></p> <ul style="list-style-type: none"> <li>-Patent and patent pending: 3 WIPO patent, 3 US patent, 2 EU patent, 1EU patent pending, 2 Koreaa patent pending, 10 Romanian patent, 7 Romanian patent pending;</li> <li>- Published papers (proceedings, articles) : more than 30</li> <li>- Book chapters :4</li> <li>- National, international conferences, international patent fairs and exhibitions : more than 70</li> </ul>

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## Annexes Patents and patents pending list and related distinctions

- 1) E.Surducan, V. Surducan, "Method and transducer for temperature measurements in microwaves power processing of materials" patent RO –125999/ 2014 (**Gold Medal** at the 14 th International Exhibition of Inventions, *INVENTIKA*- Bucuresti, Romania, 2010 – as patent pending presentation)
- 3) E.Surducan, V. Surducan, Adela Halmagyi, "Process and installation for stimulating plat development in microwaves field", patent **RO- 125068 / 28.02.2012**
- 4) E.Surducan, V.Surducan, Soran Maria Loredana, Bros Ildiko, " Microwaves power device for chromatographic separation of chemical compounds", patent **RO 123363 /28.10.2011**
- 5-8) E.Surducan, Daniel Iancu, John Glossner, "Microstrip multi-band composite antenna", **US Patent US 7,746,276 / 29 Jun.2010, European Patent EU 1854169/ 14.11.2007**, Korean patent pending **KR 20070102491 (A) /18.10.2007**; International patent (**WIPO**) **WO2006086194 (2006)**,
- 9) E.Surducan, V.Surducan "*Procedure and device for dynamic processing of materials*" Romanian Patent, **RO 00122063 B1(2008) Gold Medal** at the 35th IEI, New Techniques and Products, Geneva, **2007, Gold Medal** at the 12 th IEI, *INVENTIKA*- Bucuresti, Romania, **2007, Gold Medal** at the 8th IEI- PROINVENT – Cluj Napoca, Romania, 2010
- 10-13) E.Surducan, Daniel Iancu, John Glossner, "Modified printed dipole antennas for wireless multi-band communication" **US Patent US 7,095,382 B2**, ( Aug.22, **2006** ), **European Patent, EU 1,687,867 /09.08.2006**, Korean patent pending **KR 20060123188/01.12.2006**, International patent (**WIPO**) **WO2005053092A1(2005)**
- 14) E.Surducan, Daniel Iancu, John Glossner, "Modified printed dipole antennas for wireless multi-band communication, (Part I) " **US Patent US 7,034,769 B2**, (Apr.25, **2006**)
- 15) Biriş A., Surducan E., Misan I., Surducan V., Lupu D., Vlassa M., Popeneciu G.L, Ardelean O., Blăniţă G., Borodi G., Coldea I. Process for the synthesis of organic-metal structures by microwave activation, Patente (RO) 00126343 /2012
- 16) E. Surducan, S.V. Filip, V. Surducan, *Process for Activation of the EPDM Rubber in Microwave Plasma*, Romanian Patent, **RO 00116624**
- 17) E. Surducan, V. Surducan, G. Nagy, S.V. Filip, *Installation for Treatment in Microwave Field*, Romanian Patent, **RO 00116514, Bronze Medal** at the 30 th International Exhibition of Inventions, New Techniques and Products, Geneva, **2002**
- 18) E.Surducan, V.Surducan, *The process and device for heating fluids without dielectric losses*, Romanian Patent, **RO 00116515, Gold Medal** at The 50th Anniversary World Exhibition of Innovatiopn Research and New Technology EUREKA - BRUSSELS, **2001**
- 19) E.Surducan, V.Surducan, *The thermographic transducer for high power microwave radiation*, Romanian Patent, **RO 00116506, Silver Medal** at The 52th World Exhibition of Innovatiopn Research and New Technology EUREKA - BRUSSELS, **2003**,
- 20) S.V. Filip, E. Surducan, *Process for Acridone Synthesis*, Romanian Patent, **RO 00114616**

### ROMANIAN / EUROPEAN PATENTS PENDING

- 1) V. Surducan, E. Surducan, C.Neamtu, Array of temperature sensors for characterizing food heating homogeneity, RO132883 (A0)/2018-10-30
- 2) Iancu S. D., E. Surducan, V. Surducan, Monolithic dual band antenna, **2018-05-16**, KR20180051494 (A); CN108140709 (A); EP3326214 (A1); US2017025757 (A1); WO2017015265 (A1).
- 3) E. Surducan, V. Surducan C.Neamtu, Antenă de bandă largă și antenă redresoare realizată cu această antenă pentru colectarea electrosmogului și conversia lui în energie electrică, (RO) A00553/02.08.2016
- 4) E. Surducan, A. Limare V. Surducan C.Neamtu, E. Di Giuseppe, "Microwaves heating device", (EU) EP 14305749.5 /20.05.2014, International patent (**WIPO**), WO2015177244\_A1/ 26.11.2015
- 5) V. Surducan, E. Surducan, A. Limare, "Stabilization and control block for the current filament supply of the magnetrons", patent pending (RO) A00573/31.07.2013
- 6) E.Surducan, V. Surducan, Device for connecting a camera to a treatment chamber in microwave power field for real-time acquisition of processed sample images –patent pending RO-A00567-30-07-2012
- 7) V.Surducan, E.Surducan, Camelia Neamtu, "Embedded module for driving microwave generators in medical and laboratory applications" patent pending RO – A00113/11.02.2010, **Silver Medal** at the 14 th International Exhibition of Inventions, *INVENTIKA*- Bucuresti, Romania, **2010**
- 8) V.Surducan, E.Surducan, "Supply system for electronic microcontroller driven relay" patent pending RO – A00365/06.02.2009
- 9) V.Surducan, E.Surducan, "Universal driver for unipolar step motor", patent pending, RO – A00130/06.02.2009
- 10) G. Popeneciu, I.Coldea, I. Misan, Gabriela Balnita, E.Surducan, V.Surducan, "Microwaves Sintesys of the metal-organic structures at normal pressure", patent pending RO A/00737 din 18.09.2009

## PROCEEDINGS, BOOKS and LECTURES – selective list-2006-2016

1. Loïc Fourel, Angela Limare, Claude Jaupart, Emanoil Surducan, Cinzia G. Farnetani, Edouard C. Kaminski, Camelia Neamtu, Vasile Surducan, "The Earth's mantle in a microwave oven: thermal convection driven by a heterogeneous distribution of heat sources" *Exp Fluids* (2017) 58:90, DOI 10.1007/s00348-017-2381-3
2. A. Halmagyi, E. Surducan, V. Surducan, The effect of low- and high-power microwave irradiation on in vitro grown Sequoia plants and their recovery after cryostorage, *J. of Biol. Phys.*, DOI 10.1007/s10867-017-9457-4/2017
3. C. Viliche Balint, V. Surducan, E. Surducan, I.G. Oroian, Plant irradiation device in microwave field with controlled environment, *Computers and Electronics in Agriculture* 121 (2016) 48–56
4. A. Limare, K. Vilella, E. Di Giuseppe, C. G. Farnetani, E. Kaminski, E. Surducan, V. Surducan, C. Neamtu, L. Fourel and C. Jaupart, Microwave-heating laboratory experiments for planetary mantle convection", *J. Fluid Mechanics* 777, 50-67 (2015) doi:10.1017/jfm.2015.347
5. E. Surducan, V. Surducan, A. Limare, C. Neamtu, and E. Di Giuseppe, "Microwave heating device for internal heating convection experiments, applied to Earth's mantle dynamics", *Review of Scientific Instruments* 85, 124702 (2014); <http://dx.doi.org/10.1063/1.4902323>
6. V. Surducan, E. Surducan, "Low-Cost Microwave Power Generator for Medical and Scientific Use, *IEEE Microwave Magazine*, vol. 14, issue 4, 124-130, 2013 <http://dx.doi.org/10.1109/MMM.2013.2248651>
7. E. Surducan, A. Limare, V. Surducan, C. Neamtu and E. Di Giuseppe, "Microwaves Power Distribution Map Revealed by Liquid Crystals" *Electromagnetics in Advanced Applications (ICEAA), 2013 International Conference on*, Page(s):287 – 288, Print ISBN:978-1-4673-5705-0, DOI:10.1109/ICEAA.2013.6632238
8. A. Limare, E. Surducan, V. Surducan, C. Neamtu, E. di Giuseppe, K. Vilella, C. G. Farnetani, E. Kaminski and C. Jaupart, "Microwave-based laboratory experiments for internally-heated mantle convection", *AIP Conf. Proc.* 1565, 14 (2013); <http://dx.doi.org/10.1063/1.4833687>
9. E. Surducan, C. Neamtu, V. Surducan, A. Limare and E. Di Giuseppe, "Microwaves Heating in a Specific Experimental Configuration", *AIP Conf. Proc.* 1565, 161 (2013); <http://dx.doi.org/10.1063/1.4833718>
10. A. Surducan, D. Dabala, C. Neamtu, V. Surducan and E. Surducan, Mobile phone and my health, *AIP Conf. Proc.* 1565, 164 (2013); <http://dx.doi.org/10.1063/1.4833719>
11. V. Surducan, E. Surducan and D. Dadarlat, Simple method for highlighting the temperature distribution into a liquid sample heated by microwave power field *AIP Conf. Proc.* 1565, 167 (2013); <http://dx.doi.org/10.1063/1.4833720>
12. D. Dabala, E. Surducan, V. Surducan and C. Neamtu, Risk assessment and management of radiofrequency radiation exposure *AIP Conf. Proc.* 1565, 171 (2013); <http://dx.doi.org/10.1063/1.4833721>
13. V. Surducan., E. Surducan., C. Neamtu., D. Dadarlat., R. Ciupa, Easily Usable Human-Device Interface for Microwave Therapy Apparatus, *International Journal of Practical Electronics*, 1(1), pp.01-07, 2013, DOI: 10.14419/ijpe.v1i1.730;
14. E. Surducan, V. Surducan, A. Butiuc-Keul, A. Halmagyi, Microwaves irradiation experiments on biological samples, *STUDIA UBB BIOLOGIA*, LVIII, 1, 2013 (p. 83-98)
15. Vasile Surducan, Emanoil Surducan, Radu Ciupa, Camelia Neamtu, Determination of Microwave Generators' Performance for Medical applications, *Proceedings of the 7<sup>th</sup> International Symposium on Advanced Topics in Electrical Engineering*, Bucharest 12-14May, 2011, pp.551-555, ISSN 2068-7966
16. Cora Iftode, Simona Miclaus, Paul Bechet, Emanoil Surducan, A TEM cell Model Analysis for Radiofrequency Dosimetry Improvement by Computational Means, *Proceedings of the 7<sup>th</sup> International Symposium on Advanced Topics in Electrical Engineering*, Bucharest 12-14May, 2011, pp.305-309, ISSN 2068-7966
17. Vasile Surducan and Emanoil Surducan, "Increase efficiency in embedded digital-I/O lines", *Electronic Design, Strategy, News (EDN)-Design Ideas*, pag. 54-59, APRIL 21, 2011 <http://www.edn.com/archive/2011/20110421.php>
18. Vasile Surducan, Emanoil Surducan, Medical and scientific apparatus with microwave thermal and non-thermal effect, *Nonconventional Technology Review*, nr.1, pag.42-49, 2010, <http://www.rectn.ro/no1-2010.html>
19. M.L. Soran, S.C. Cobzac, C. Varodi, I. Lung, E. Surducan, V. Surducan, Extraction and Chromatographic Determination of Essential Oils from *Ocimum Basilicum* L. Leaves, *Studia UBB, Chemia*, LV, 3, pag.31-37, 2010
20. Emanoil Surducan, Vasile Surducan, Camelia Neamtu, Cristian D. Tudoran, Near-field Effect of the Microwaves Power Applicators Investigated for Liquid Processing Applications, *Proceedings of IEEE International Conference on Automation, Quality and testing, Robotics - AQTR-2010*, pp360-364, IEEE Cat. Nr.CFP10AQT-PRT, ISBN 978-1-4244-6722-B
21. Vasile Surducan, Emanoil Surducan, Radu Ciupa, Marius-Roman, Embedded System Controlling Microwave Generators in Hyperthermia and Diathermy Medical Devices, *Proceedings of IEEE International Conference on Automation, Quality and testing, Robotics - AQTR-2010*, pp366-372, IEEE Cat. Nr.CFP10AQT-PRT, ISBN 978-1-4244-6722-B
22. V. Surducan, M. Moudgill, G. Nacer, E. Surducan, P. Balzola, J. Glossner, S. Stanley, Meng Yu, and D. Iancu, "The Sandblaster Software-Defined Radio Platform for Mobile 4G Wireless

23. V Surducan, Ildiko Lung, E Surducan, , "The effect of coloured light on *Ipomoea purpurea* growth", Journal of Physics: Conference Series 182 (2009) 012018 doi:10.1088/1742-6596/182/1/012018
24. E Surducan, C Neamtu and V Surducan, "Dielectric properties of Zea Mays kernels – studies for microwave power processing applications", Journal of Physics: Conference Series 182 (2009) 012017 doi:10.1088/1742-6596/182/1/012017
25. "The extraction and chromatographic determination of the essentials oils from *Ocimum basilicum* L. by different techniques" Maria Loredana Soran, Simona Codruta Cobzac, Codruta Varodi, Ildiko Lung, Emanoil Surducan and Vasile Surducan, Journal of Physics: Conference Series 182 (2009) 012016 doi:10.1088/1742-6596/182/1/012016
26. E. Surducan, V.Surducan, D.Iancu, J.Glossner, "Multiband Antennas for SDR Applications," International Journal of Digital Multimedia Broadcasting, vol. 2009, Article ID 460143, 9 pages, 2009. doi:10.1155/2009/460143.
27. M.L.Soran, I.Bros,E.Surducan,V.Surducan, Microwave Assisted Thin Layer Chromatography – an Improved Separation Technique, Journal of Planar Chromatography, 21 (2008) 4, pag.: 243–248
28. Miclaus S., Surducan E., Helbet R., Study of the propagation modes and of the leakage field of a multimode microwave cavity, Buletinul Stiintific al Academiei Fortelor Terestre, nr. 1/2008
29. Emanoil Surducan, Vasile Surducan, Adela Halmagyi, Daniel S. Iancu,"Microwaves Irradiation Experiments on Biological Samples Using a Wireless Unit", **Book of proceedings** -11th International Symposium on Microwave and Optical Technology (ISMOT-2007) pp. 397-400, ISBN 978-88-548-1476-9
30. Emanoil Surducan, Vasile Surducan, Daniel S. Iancu, John Glosner,"Multi-bands antenna with adaptive circuit", **Book of proceedings** -11th International Symposium on Microwave and Optical Technology (ISMOT-2007) pp. 633-636, ISBN 978-88-548-1476-9
31. Surducan, E.; Iancu, D.; Surducan, V.; Glossner, J., Miniature multiband antennas for hand held WIMAX and WiFi application, Electromagnetics in Advanced Applications, 2007. ICEAA 2007. International Conference on Volume, Issue , 17-21 Sept. 2007 Page(s):13 – 16, IEEE Xplore
32. Surducan, E.; Iancu, D.S.; Surducan, V.; Stanley, S , Multi-band antennas for SDR wireless handset application, Electromagnetics in Advanced Applications, 2007. ICEAA 2007. International Conference on Volume , Issue , 17-21 Sept. 2007 Page(s):523 – 526, IEEE Xplore
33. **Book Chapter** : "*Software Implementation of WiMAX on the Sandbridge SandBlaster Platform*", Pages: 435-446, Volume 4017/2006, Book Series: Lecture Notes in Computer Science; Book:**Embedded Computer Systems: Architectures, Modeling, and Simulation**, Publisher:Springer Berlin / Heidelberg; Copyright 2006, ISBN 978-3-540-36410-8, ISSN0302-9743 , Authors: Daniel Iancu, Hua Ye, Emanoil Surducan, Murugappan Senthilvelan, John Glossner, Vasile Surducan, Vladimir Kotlyar, Andrei Iancu, Gary Nacer and Jarmo Takala
34. Emanoil Surducan , Daniel S. Iancu, Vasile Surducan, John Glossner,"MICROSTRIP COMPOSITE ANTENNA FOR MULTIPLE COMMUNICATION PROTOCOLS International Journal of Microwave and Optical Technology (IJMOT 2006-5-30) Vol-I-No.2, pag. 772-775, 2006

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