

Name: Cristian Ravariu

📍 Str. Splaiul Independenței nr. 313, sect.. 6, Bucharest, Romania

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📍 Actual job: Full Professor at "Universitatea Politehnica din Bucuresti", Faculty of Electronics Telecommunications and Information Technology, Dept. of Devices Circuits and Architectures in Electronics (DCAE), BioNEC Group, Str. Splaiul Independentei 313, sect. 6, Bucharest, 060042, Leu sedium, Building B, office: B108, Phone: (office): +4021-4024840.
E-mail (actual job): cristian.ravariu@upb.ro

📄 https://www.dcae.pub.ro/en/membri/12/ravariu_cristian/
https://www.researchgate.net/profile/Cristian_Ravariu
<https://ravariuprofessional.wordpress.com/>

A detailed list of Publishings at:
POSITION

https://www.researchgate.net/profile/Cristian_Ravariu

WORK EXPERIENCE

- | | |
|--------------------|---|
| May 2019–Present | IEEE Senior Member |
| Oct 2013–Present | Full Professor Dr. eng., Habilitated
"Politehnica" Univesity of Bucharest, Faculty of Electronics Telecommunications and Information Technology, Dept. of Devices Circuits and Architectures Electronics, 060042 Bucharest Romania
Habilitation domain: Nano-Bio-Engineering , Electronic Devices , Biosensors

Business or sector University and Research |
| Oct 2005–Sept 2013 | Associated Professor Dr. ing.
Politehnica Univesity of Bucharest, Faculty of Electronics Telecommunications and Information Technology, Bucharest, Romania |
| Jan 2002–Sept 2005 | Lecturer Dr. ing.
Politehnica Univesity of Bucharest, Faculty of Electronics Telecommunications and Information Technology, Bucharest, Romania |
| Jul 2001–Dec 2001 | Assistent Dr. ing.
Politehnica Univesity of Bucharest, Faculty of Electronics Telecommunications and Information Technology, Bucharest, Romania |
| Mar 1999–Jul 2001 | Assistent ing.
Politehnica Univesity of Bucharest, Faculty of Electronics Telecommunications and Information Technology, Bucharest, Romania |
| Apr 1996–Feb 1999 | Scientific Researcher
National Institute of Research and Development for Microtechnology, Bucharest (Romania)
Str. Erou Iancu Nicolae no. 22A RO-030012 Bucharest, Romania, www.imt.ro |

Jan 1994–Mar 1996 **Assistent Researcher**
National Institute of Research and Development for Microtechnology, Bucharest (Romania)

Sept 1993–Jan 1994 **Debutant Researcher**
National Institute of Research and Development for Microtechnology, Bucharest (Romania)

EDUCATION AND TRAINING

Jun 2010–Mar 2013 **Post-Doc Studies**
Politehnica University of Bucharest, Faculty of Electronics Telecommunications and Information Technology
Splaiul Independenței 313, sect. 6, 060042 Bucharest (Romania)
www.pub.ro
POSDRU Excel nr. POSDRU/89/1.5/S/62557. Generalized SOI structures for nanotransistors and biostructures. Post-Doc Diploma.

Apr 1994–Jul 2001 **PhD Studies**
Politehnica University of Bucharest, Faculty of Electronics Telecommunications and Information Technology
Splaiul Independenței 313, sect. 6 RO-060042 Bucharest (Romania)
www.pub.ro
Specialty of Micro-Electronics, under coordination of Acad. Prof. dr. eng. Adrian Rusu.
Thesis: *Integrated structures on insulated (SOI) substrate*.
Diploma: Magna Cum Laudae. Title: DOCTOR in Electronics and Telecommunication

Sep 1988–Jul 1993 **Bachelor and Master Studies (Five years)**
Politehnica University of Bucharest, Faculty of Electronics and Telecommunications
Splaiul Independenței 313, sect. 6 RO-060042 Bucharest (Romania)
www.pub.ro
Diploma of engineer in Microelectronics (for 5 years).

Oct 2012–Mar 2013 **Foreign Specialty Stage**
Laboratory of Analysis and Architecture of Systems LAAS-CNRS, Toulouse (France)
www.laas.fr
Theme: biosensors and organic electronic.

01 Jun 2011–06 Jun 2011 **Foreign Summer School in Bioelectronics**
European Science Foundation ESF, S F Guixols (Spain)
Theme: B Cells and Protection

20 Aug 2006–25 Aug 2006 **Foreign SINANO Specialty Stage in Nanoelectronics**
University of Bologna – Arces, Bologna (Italy)
Specialty course SINANO, Simulation in NANODEVICES, under org. Prof. Enrico Sangiorgi, University of Bologna – Arces, Italia.

02 Jul 06–07 Jul 06 **Foreign Specialty Stage in Bioelectronics**
Dept. of Medical Physics, School of Medicine, University of Patras, Patras, Greece
Participant at 3rd Summer School on Emerging Technologies in Medicine, biosensors, biosignals,

01 Jul 2003–30 Jul 2003 **Foreign Specialty Stage in Micro-electronics, about SG-MOSFET**

École Polytechnique Fédérale de Lausanne, EPFL, Lausanne, Switzerland

Theme: *Low power electrostatic silicon on sapphire RF switches for telecom application.*

IEEE ACTIONS

- 2008 - IEEE Member
- 2008 - Member at Bio-Medical Engineering Chapter.
- 2012 - 2019 - SSCS-037 Romanian Chapter Chairman
- 2014 - present - Revitalizing Electron Device Society in Romania and EDS-015 Romanian Current Chapter Chairman
- 2019 - present - Senior IEEE Member.
- 2020 - present - Member of the IEEE Romanian Council of Nanotechnology

PERSONAL SKILLS

Mother tongue Romanian

Other languages

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	B2	B2	C2	B2	C1
French	A2	A2	B1	B1	A1
Italian	A1	A1	A1	A1	A1

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2: Proficient user
[Common European Framework of Reference for Languages](https://www.cedefop.europa.eu/en/common-european-framework-reference-languages)

Communication skills

- Team work skills, Seriousness, Communication skills (in all these years I worked in project teams, departments).
- Excellent abilities to teach: Electronic Devices, Nano-Bio-Electronics, Semiconductor Physics, Modelling of active Devices, Basic circuits, Biosensors, Medical Devices.
- Abilities to teach in French language the discipline Semiconductor Devices, in actual University (2005-2023)

Organisational / managerial skills

- Good leadership skills achieved as leader of a multi-partnership research team, gained from Romanian national projects as director of 7 projects.
- Member of the Board of the Faculty of Electronics Council from 2012-2019.
- Chairman of IEEE Romanian-Chapters: Electron Devices.
- Reviewer of Projects: (National 2015-2019), Rep. Moldova (2019), M-ERA-NET (2020).
- Reviewer of papers at different Journals (e.g. IEEE Trans on Electron Devices, etc).
- Editor for special issues at Biosensors, MDPI Journal.

Job-related skills

Ability to publish papers, organize scientific meetings, connections with IEEE.

Computer skills Silvaco software package (Athena-Atlas, Suprem, Medici).
SPICE software: Spice 16.6-Cadence, LTSpice.
Remote Learning during pandemy'2020: Team from Microsoft, Moodle Platform, Skype.

Strong points

- Ability to publish papers in peer-review Journals, papers to Conferences, Chapters, books together with a scientific group.
- Excellent teaching skills for: MOS, Bipolar, JFET, other FETs, TFT, Tunnel-FET transistors, diodes, pn-junction and physics of semiconductors, Athena Microelectronics simulation, Atlas device simulation.
- Experience and opening to participate/propose/coordinate research projects.
- Some hot topics for possible research works in institution: Nanodevices, almost-Nothing On Insulator (a-NOI) transistor, OECT Transistors, Biosensors, Organic-TFT transistors.
- Collaborations with Inst. of Microtechnology with clean room, Romania and University JECRC, Jaipur, Digital Circuits, India for possible future collaborations.

A detailed list of Publishings is available at: https://www.researchgate.net/profile/Cristian_Ravariu

Most relevant achievements for this post

I. Teaching field

I.1. Maximum expertise field the following courses with adjacent seminaries, possible labs/projects:

- **Bio-electronics and integrated biosensors** (e.g for Master): Biosensor work principle and review, Bioscience: Bio-electronics - Biodevices - biosignals; biodetection in the living matter; cellular receptor; analytes, receptors integration, transducers, integrated Enzyme-FET Immuno-FET DNA-FET Microbial-FET, technological clues, resting and action potential at cell level.
- **Nano-electronics** (e.g for Master): Ultimate CMOS technological nodes in planar technology, future directions for CMOS integrated circuits. Nano-devices: Tunnel-FETs, Fin-FETs, GAA-FETs, Nano-wire-FETs, Vacuum nanotransistors, Carbon nanotubes-FETs, Thin Film Transistors TFT, Organic-TFT, Nano-core-shell-TFT, Single Electron Transistor SET, Silicon On Nothing SON-MOSFET, NOI.
- **Simulation tools for Micro-Nano-electronics** (for Master): Athena simulator for Si-wafers processing, Atlas device simulator.
- **Physics of semiconductors** (Bachelor studies): Energy diagrams, carriers - phenomena, models, current transport, non-equilibrium, models for recombination rates/mobillities system of equations for semiconductors, tunnelling thru thin gate oxides, impact ionization.
- **Active Electronic Devices** (Bachelor studies): Devices presentation - microelectronic technology draft - specific physical phenomena - equations for static characteristics deduction - models - parameters - equivalent circuits of dynamic regime - biasing circuits - applications. This sequence is applied for the following devices: pn-junction, diodes, bipolar transistor (BJT), junction field effect transistor (JFET), metal-oxide-semiconductor transistor (MOS), silicon on insulator transistors (SOI).
- **Models of the active components** for Spice or a course of Devices Modelling - BJT - Ebers-Moll, MOS - Ithantola-Moll, Sub-threshold models, EKV, Theorem of Non Linear Electrical Conduction.

I.2. Books for students (in Romanian language)

In the detailed list of publications you can see that C. Ravariu published more than 8 books for students in Romanian languages. Few examples:

- Cristian Ravariu. **Electronic Devices**, pp. 1-326, Publisher: Printech Romania, 2004, ISBN 973-718-133-6.
- Cristian Ravariu. **Electronics biodevices: from nanostructures to medical applications** (in Romanian), 1-st Edition, Publisher: Politehnica Press Publishing, Bucharest, Romania, pp. 1-242, ISBN: 978-606-515-071-3, 2010; Awarded book by the Romanian Academy with Tudor Tanasescu award in 2011.
- Florin Babarada, Cristian Ravariu. **Technologies of fabrication for micro- and bio-sensors**, pp. 1-258, Publisher: Editura Printech Romania, 2004, ISBN 973-718-119-0.

II. Research field

II.1. Main Bio-Engineering Research Contracts to which C. Ravariu worked

II.1.1. **C. Ravariu was Director of the Following National Romanian Projects:**

- Project title: "**BioFET transistors** for customized bioanalyses and cellular functions", (BIOFET) PNII Partnerships Complex Projects Program, commission 1 (Information and communication technology), UEFISCDI fund unit, 2008-2011, 5 Romanian Partners, ~ 250.000Eur.
- Project title: "Non-invasive technology for functional characterization of the **cellular beta-pancreatic mass** with unconventional electronic

bio-devices", (ELECTROCELL) PNII Partnerships Complex Projects Program, commission 6 (Biotechnologies), UEFISCDI fund unit, 2008-2011, 4 Romanian Partners, ~ 220.000Eur.

- Project title: "**Nano-transistors** with thin films implemented through nanotechnologies and **organic** technologies at room temperature", (TFTNANOEL) PROGRAM PNIII: P4 - Fundamental and Frontier Research, UEFISCDI fund unit, 2017-2019, 1 Romanian Partner, ~ 200.000Eur.

- Project title: "Demonstrator realization in planar transistor technology with **tunneling of ultra-thin insulators** - as promoter of a series of **nano-devices** in industry", (DEMOTUN) PROGRAM PNIII: P2 - Increasing the competitiveness of the Romanian economy through research, development and innovation, PROJECT TYPE: Experimental-Demonstrative Project, UEFISCDI fund unit, 2017-2018, 2 Romanian Partners, ~ 120.000Eur.

- Other 3 Grants for Young Researchers, between 2000-2007, where C. Ravariu was Director.

II.2. Patents

- Inventors: **Cristian Ravariu**, "Field effect transistors with a cavity on insulator, NOI (Nothing On Insulator) and a-NOI (almost-Nothing On Insulator)," Romanian Patent Number: RO126811-A0, OSIM Romanian agency, awarded in Aug. 2013.

- Inventors: Florin Babarada, Elena Manea, **Cristian Ravariu**. "Process for manufacturing, on silicon, the devices for detecting and characterizing the electrically charged **biological molecules**," Patent Number(s): RO126615-A2 ; RO126615-B1, OSIM Romanian agency, awarded in Nov 2015.

- Inventor and owner: **C. Ravariu**: "Transistors with p/n overlap films for **biomimetic** and industrial applications," Registered at OSIM Romanian Agency no. A/00021 / 12.01.2016, pass to decision stage in 2020.

- Inventors: **C. Ravariu**, F. Babarada, E. Manea, C. Parvulescu, title: "Manufacturing process of the versatile planar semiconductor device for testing the tunneling in **ultra-thin insulator**", OSIM Patent Filed: A00526 / 11-07-2018, Published in Apr. 2020 by OSIM.

- Inventors: **Cristian Ravariu** (Ro), Avireni Srinivasulu(India) , title: "Technology for integrated circuit design with low number of **NOI-MOS hybrid** devices," Owner: Universitatea Politehnica din Bucuresti - UPB Bucuresti, Romania, Priority Request for International Patenting, recorded A00813/17.10. 2018, title published in Apr. 2020, pass to examination stage in 2020.

II.3. Top Articles in Top Journals or Chapters in Books in Bio-Nano-Engineering field

- **C. Ravariu**, E. Manea, F. Babarada, Masks and metallic electrodes compounds for **silicon biosensor integration**, *Journal of Alloys and Compounds (Q1-Elsevier Journal)*, vol. 697, pp. 72-79, March 2017, <http://dx.doi.org/10.1016/j.jallcom.2016.12.099>

- **C. Ravariu**, C. Părvulescu, E. Manea, A. Dinescu, R. Gavrilă, M. Purica, Vijay Arora. Manufacturing of a Nothing On Insulator Nano-Structure with two Cr/Au Nanowires Separated by 18 nm Air Gap. *Nanotechnology, (Q1-IOP Journal)*, vol. 31, no. 27, pp.1-9, 2020. <https://dx.doi.org/10.1088/1361-6528/ab7c45>

- **C. Ravariu**, Deeper Insights of the Conduction Mechanisms in a Vacuum SOI Nanotransistor, *IEEE Transactions on Electron Devices Q1-IEEE Journal*, vol. 63, no. 8, 2016, pp. 3278 - 3283, DOI: 10.1109/TED.2016.2580180.

- **C. Ravariu**, C. Ionescu-Tirgoviste, F. Ravariu. *Glucose biofuels properties in the bloodstream in conjunction with the beta cell electrophysiology*, Proceedings of 2-nd IEEE International Conference on Clean Electrical Power Conference, Jun. 09-11. 2009, Capri, Italy, pp. 124-127, DOI: 10.1109/ICCEP.2009.5212071, WOS:000275735500020 (cited 20 times).

A detailed list of Publishings is available at: https://www.researchgate.net/profile/Cristian_Ravariu

Prof. dr. ing. Cristian Ravariu