

Curriculum vitae



Personal Details:

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Date of Birth: 2nd August 1975
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Marital Status: Married

Education:

11/2009 Ph.D. in Chemistry, Institute of Physical Chemistry “Ilie Murgulescu” of the Romanian Academy.
Thesis entitle: “*The study of surface phenomena at single monocrystalline electrode/solution interface*”.

10/1998 - 07/1999 M. Sc., Physics Department, University of Bucharest.
10/1993 - 07/1998 B. Sc., Physics Department, University of Bucharest.

Positions:

Since 05/2010 Scientific Researcher at Institute of Physical Chemistry “Ilie Murgulescu” of Romanian Academy Catalysis and Surface Science Department.

02/2000 – 05/2010 Research Assistant at Institute of Physical Chemistry “Ilie Murgulescu” of Romanian Academy Catalysis and Surface Science Department.

Research Experience

- Study by impedance spectroscopy the bulk and grain boundary effects on electrical conduction of LSGM / GCO electrolyte used in SOFC.
- Electrochemical impedance spectroscopy investigations on bare and chemically modified single crystalline electrodes (GaAs(hkl) and Ag(111)), pointing out the capacitive contribution of the surface states, deposited films and adsorption layers. Non-linear optic properties at electrified single crystalline electrodes / solution interface (evidence of surface state- and field-effects at GaAs(hkl) / electrolyte junction).
- Spectroellipsometric characterization of thin films and single crystalline electrodes / solution interface.

Research Work:

International scientific collaborations

- 12/2004 – 07/2006 EIS and SHG measurements on thiol covered Ag(111) single-crystals at Ulm University, Electrochemistry Department, Germany as visiting researcher.
- 04/2006 -06/2006 Visiting researcher at Universidad Nacional de Cordoba (Argentina) within the project *Experimental and theoretical study of adsorption of molecules of biological interest on silver and gold single-crystals* at Facultad de Matematica, Astronomia y Fisica, based on the mutual Germany -Argentina Cooperation Program SECYT-DAAD.
- 05/2003 – 10/2003 Electrochemical impedance spectroscopy and nonlinear optical investigations on GaAs(hkl) / solution Humboldt Fellowship at Ulm University Electrochemistry Department as a junior scientist within the framework of the Stability Pact for South Eastern Europe of the Alexander von Humboldt Foundation.
- 27/01/2003 -10/02/2003 Ellipsometry and FTIR measurements on oxide-based films obtained by sol-gel method – National Microelectronics Research Centre (NMRC) Cork, Ireland as visiting researcher within the project “TiO₂(Fe³⁺) nanostructured thin films with antibacterial properties” .
- 22/07/2002 – 1/08/2002 Preparation and investigation of oxide-based films and semiconductors for electronics and optoelectronics application by ellipsometry at Institute of Solid State Physics, Sofia, as visiting researcher within the inter-academic exchange between Romanian Academy and Bulgarian Academy.

National Grants

- 2008-2009 „Single-crystalline semiconductor electrodes modified with monolayer protected gold clusters”, **The National University Research Council Grant** – coworker.
- 2007-2009 „Physical-chemical investigation techniques on oxidic multilayer structures obtained by innovative wet chemical methods with applications in optoelectronics”, **The National University Research Council Grant** – coworker.
- 2005-2007 „Optical and electrochemical properties of single crystalline GaAs(hkl) electrodes chemically modified”, **The National University Research Council Grant** – coworker.

- 2002-2004 „Second harmonic generation at single crystalline GaAs(hkl) electrodes interface with aqueous electrolyte solutions”, **Ministry of Education and Research (MEC)** – coworker.
- 2000-2002 „The prevention and the integral control of the pollution generated by the activities of the chemical industry” - **Orizont 2000 - Ministry of Research and Technology**– coworker.

List of publications:

1. Lazarescu, V.; **Scurtu, R.**; Lazarescu, M.F.; Toader, A.M.; Volanschi, E.; Passivation effects of 4,4'-thio-bis-benzenethiolate adsorbed layers on semiconducting electrodes. *Electrochimica Acta*, **2010**, 55(27), 8293-8301.
2. **Scurtu, R.**; Ionescu, N. I.; Lazarescu, M. F.; Lazarescu, V., Surface states- and field-effects at p- and n-doped GaAs(111)A/solution interface. *Physical Chemistry Chemical Physics* **2009**, 11, (11), 1765 - 1770.
3. Lazarescu, V.; **Scurtu, R.**; Lazarescu, M. F.; Toader, M. A.; Volanschi, E.; Santos, E.; Jones, H.; Gütz, G.; Bäuerle, P., Potential-induced conformational changes in α -CN-terthiophene thiolate film on GaAs(110). **2009**, 25, 6522-6531.
4. Santos, E.; Avalle, L. B.; **Scurtu, R.**; Jones, H., l-Cysteine films on Ag (111) investigated by electrochemical and nonlinear optical methods. *Chemical Physics* **2007**, 342, 236-244.
5. Trapalis, C.; Gartner, M.; Modreanu, M.; Kordas, G.; Anastasescu, M.; **Scurtu, R.**; Zaharescu, M., Stabilization of the anatase phase in TiO₂ (Fe³⁺, PEG) nanostructured coatings. *Applied Surface Science* **2006**, 253, (1), 367-371.
6. Lazarescu, V.; Gartner, M.; **Scurtu, R.**; Anastasescu, M.; Ghita, A.; Lazarescu, M. F.; Schmickler, W., Fermi Level Pinning at n-GaAs(110) Electrodes. *Elsevier* **2006**.
7. Lazarescu, V.; **Scurtu, R.**; Lazarescu, M. F.; Santos, E.; Jones, H.; Schmickler, W., Field effects and surface states in second harmonic generation at n-GaAs (h k l) electrodes. *Electrochimica Acta* **2005**, 50, (25-26), 4830-4836.
8. Gartner, M.; **Scurtu, R.**; Ghita, A.; Zaharescu, M.; Modreanu, M.; Trapalis, C.; Kokkoris, M.; Kordas, G., Spectroellipsometric characterization of sol-gel TiO₂-CuO thin coatings. *Thin Solid Films* **2004**, 455, 417-421.
9. Crisan, M.; Predoana, M. G. L.; Crisan, D.; **Scurtu, R.**; Gavrilă, R.; Zaharescu, M., SiO₂-ZrO₂ Sol-Gel Nanostructured Thin Films with Optical Properties. *Key Engineering Materials* **2004**, 264, 553-556.
10. Crisan, M.; Gartner, M.; Predoana, L.; **Scurtu, R.**; Zaharescu, M.; Gavrilă, R., Sol-Gel SiO₂-ZrO₂ Coatings for Optical Applications. *Journal of Sol-Gel Science and Technology* **2004**, 32, (1), 167-172.
11. Lazarescu, V.; Lazarescu, M. F.; **Scurtu, R.**; Anastasescu, M., Electrochemical and Optical Nonlinear Properties of GaAs(111)-A Electrodes. *Annals of West University of Timisoara* **2003**, (12), 589-596.
12. Gartner, M.; Crisan, M.; Jitianu, A.; **Scurtu, R.**; Gavrilă, R.; Oprea, I.; Zaharescu, M., Spectroellipsometric Characterization of Multilayer Sol-Gel Fe₂ O₃ Films. *Journal of Sol-Gel Science and Technology* **2003**, 26, (1), 745-748.
13. Georgescu, V.; Popa, V. T.; **Scurtu, R.**; Ionescu, N. I., Co-Cr mixed oxide catalysts for complete oxidation of aromatic hydrocarbons. *Progress in catalysis* **2001**, 10, 51-58.

14. Georgescu, V.; Popa, V. T.; **Scurtu, R.**; Ionescu, N. I., Cu-Cr mixed oxide catalysts for complete oxidation of aromatic hydrocarbons. *Progress in catalysis* **2000**, *9*.

Conferences:

1. Second Workshop on Size-Dependent Effects in Materials for Environmental Protection and Energy Application, September **2010**, Nessebar, Bulgaria, "IT-SOFC Electrolytes Investigated by Impedance Spectroscopy", **Rareş Scurtu**, Cristian Antonescu, Victor Fruth.
2. The 7th International Conference of the Chemical Societies of the South-East European Countries on "Chemistry – Beauty and Application", September **2010**, Bucharest, Romania, "Impedance Spectroscopy Characterization of $\text{La}_{0.8}\text{Sr}_{0.2}\text{Ga}_{0.83}\text{Mg}_{0.17}\text{O}_{3-\delta}$ as Electrolyte for IT-SOFC", **Rareş Scurtu**, Cristian Antonescu, Victor Fruth.
3. The 14th International Conference of Physical Chemistry, June **2010**, Bucharest, Romania, "Study of conduction phenomena in SOFC electrolyte by impedance spectroscopy", **R. Scurtu**, S. Preda, J. M. Calderon-Moreno, C. Adronescu, V. Fruth.
4. 60th Annual Meeting of the International Society of Electrochemistry, 16-22 August, **2009**, Beijing (China), Surface States- and Field-Effects at Bare and Thiolate Covered GaAs(111)A Electrodes, **R. Scurtu**, M.F. Lăzărescu, V. Lăzărescu.
5. 60th Annual Meeting of the International Society of Electrochemistry, 16-22 August, **2009**, Beijing (China), Passivation Effects of 4, 4' Thio-bis-benzene-thiolate Adsorbed Layers on Semiconducting Electrodes, V. Lazarescu, **R. Scurtu**, M. F. Lazarescu, A. M. Toader, E. Volanschi.
6. 5th Kurt Schwabe Symposium **2009**, 24-28 Mai, Erlangen (Germania), Surface States- and Field Effects at Thiolate-Covered GaAs(110) Electrodes, V. Lazarescu, **R. Scurtu**, M. F. Lazarescu, A. M. Toader, E. Volanschi, E. Santos, H. Jones, G. Götz, P. Bäuerle
7. Journées d'Electrochimie **2009**, 6-10 iulie 2009, Sinaia, SHG- and EIS-investigations on thiolate-covered GaAs(110) electrodes, V. Lazarescu, **R. Scurtu**, M. F. Lazarescu, A. M. Toader, E. Volanschi, E. Santos.
8. The 59th Annual Meeting of the ISE, September **2008**, Seville, Spain, "Potential-induced conformational changes in α -CN-terthiophene thiolate film on GaAs(110)", Valentina Lazarescu, Guenther Goetz, Elizabeth Santos, **Rares Scurtu**, Ana Maria Toader, Elena Volanschi.
9. The 58th Annual Meeting of the ISE, September **2007**, Banff, Canada, "Self Organized Organic Monolayers on Semiconductor Electrodes" , Valentina Lazarescu, Mihail-Florin Lazarescu, Catalin Negrila, **Rares Scurtu**.
10. The 210th ECS Meeting, November **2006**, Cancun, Mexico C1 - Biological Nanostructures, Materials, and Applications „L-Cysteine Films on Ag(111) Investigated by Electrochemical and Optical Methods", Elizabeth Santos, Lucia Avalle, **Rares Scurtu** and Harold Jones.
11. The 57th Annual Meeting of the ISE, September **2006**, Edinburgh, England, „Surface States and field effects at $(\text{NH}_4)_2\text{S}$ – modified GaAs (100) electrode“, Lazarescu V., **Scurtu R.**, Gartner M., Visan T., Lazarescu M, F., Santos E., Schmickler W.

12. The 9th International symposium on the passivation of metals and semiconductors, and the properties of thin oxide layers, Paris (France), July **2005** "Fermi level pinning at n-GaAs(110) electrodes", Valentina Lazarescu, Mariuca Gartner, **R. Scurtu**, Mihai Anastasescu, Adrian Ghita, Mihail F. Lazarescu, Wolfgang Schmickler.
13. The 54th Annual ISE Meeting, Thessaloniki, Grecia, Septembrie **2004** "Surface State and Field Effects in Second Harmonic Generation at GaAs(hkl) Electrodes", V. Lazarescu, M.F. Lazarescu, **R. Scurtu**, Elizabeth Santos, H. Jones, W. Schmickler.
14. The 4th International Conference of the Chemical Societies of the South-East European Countries, July **2004**, Belgrade (Serbia) „The overall activation energy of thermokinetic oscillations”, N. I. Ionescu, M. Caldararu, C. Hornoiu, M. Carata, C. Munteanu, P. Chesler, **R. Scurtu**.

Technical Skills:

- Electrochemical methods (cyclic voltammetry, electrochemical impedance spectroscopy) – experience with Zahner IM6 and Solartron SI 1260 frequency analyzers
- Linear and non-linear optical measurements (spectroellipsometry, second-harmonic-generation(SHG))
- FTIR, AFM measurements on thin films.
- Automatized data acquisition using LabView software

Computer Skills:

- Windows 9x, Xp.
- Experience with the Origin and OriginC, Visual Basic Language, HTML, MS Office suite software and graphics packages.

Languages:

- English: fluent, written and spoken
- German: 2 semesters course for beginners at Ulm University.

Hobbies:

- Reading, trekking, photography and playing basketball.

October, 2010