

CURRICULUM VITAE

Personal data:

Surname: ROTARU
First Name: Aurelian
Date and Place of Birth: 17.06.1982, Murgeni, Romania
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Academic:

- Since 2011** *Associate professor* – Faculty of Electrical Engineering and Computer Science, Stefan cel Mare University, 13, Str. Universitatii, 720229 Suceava, Romania.
- Since 2015** *Head* of Advanced Multifunctional Materials Laboratory (NANOMAT), Research Center MANSiD, Stefan cel Mare University, 13, Str. Universitatii, 720229 Suceava, Romania.
- 2011-2014** *Head* of Advanced Materials and Nanotechnology Laboratory (AMNOL), Stefan cel Mare University, 13, Str. Universitatii, 720229 Suceava, Romania.
- 2011-2012** *Guest researcher* at Laboratoire de Chimie de Coordination (LCC), Toulouse, France, C/o Dr. Azzedine BOUSSEKSOU (azzedine.bousseksou@lcc-toulouse.fr) (6 months)
- 2010 - 2011** *Lecturer* – Faculty of Electrical Engineering and Computer Science, Stefan cel Mare University, 13, Str. Universitatii, 720229 Suceava, Romania.
- 2009 – 2010** *Postdoctoral researcher* - Advanced Materials Research Institute, 2000, Lakeshore Drive, 70148, New Orleans, Louisiana, USA, C/o Dr. Leonard SPINU (lspinu@uno.edu)
- 2008-2009** ½ ATER at Physics Department, UVSQ, Versailles, France
- 2007 – 2008** *Vacataire* at Physics Department, UVSQ, Versailles, France
- 2006 –2009:** *Ph.D studies (joint thesis):* University of Versailles Saint Quentin en Yvelines, Versailles, France and “Alexandru Ioan Cuza” University, Iasi, Romania..

Title of my Ph.D thesis: “*Theoretical and Experimental Study of the Pressure and Size Effect on the Bistable Compounds: Thermal Behavior and Study of the Relaxation*”

Thesis Supervisors : Prof. Dr. Jorge LINARES : (jlinares@phys.uvsq.fr) and Prof. Dr. Alexandru STANCU: (alstancu@uaic.ro)

2004 – 2006: M. Sc. *Electrical and Magnetic Properties of Fine and Ultra-Fine Particles*, “Alexandru Ioan Cuza” University, Iasi, Romania

2000 – 2004: B. Sc. *Medical Physics*, “Alexandru Ioan Cuza” University, Iasi, Romania

Short Visits:

2015 - Invited Researcher at Institute of Condensed Matter and Nanosciences (IMCN), UCL, Louvain la Neuve, Belgium (**1 week**)

2015 – Invited Researcher at Coordination Chemistry Laboratory (LCC), Toulouse, France (**1 week**)

2014 - Invited Researcher at Institute of Condensed Matter and Nanosciences (IMCN), UCL, Louvain la Neuve, Belgium (**2 weeks**)

2013 – Invited Researcher at Institute of Condensed Matter and Nanosciences (IMCN), UCL, Louvain la Neuve, Belgium (**2 weeks**)

2012 – Invited Researcher at Coordination Chemistry Laboratory (LCC), Toulouse, France (**1.5 months**)

2012 – Invited Researcher at Institute of Condensed Matter and Nanosciences (IMCN), UCL, Louvain la Neuve, Belgium (**2 weeks**)

2011 – Invited Researcher at Institute of Condensed Matter and Nanosciences (IMCN), UCL, Louvain la Neuve, Belgium (**1 week**)

Scholarships:

2005 – 2006: *Socrates Mobility* at University of Versailles Saint Quentin en Yvelines, Versailles, France.

2006 – 2007: *ECONET, PAI (Brancusi), AUF Mobility* at GEMaC Laboratory, University of Versailles Saint Quentin en Yvelines, Versailles, France.

2007 – 2008: *Eiffel PhD Scholarship* - for top-level PhD students at University of Versailles Saint Quentin en Yvelines, Versailles, France.

Personal skills and competences:

Languages: Romanian (mother tongue), French and English.

Technical skills and competences:

- Experience in
 - Experimental techniques: Photo-magnetism (SQUID), Magnetic measurements under pressure (Clamp-type pressure cell), DSC, Reflectance under pressure (gas pressure cell), Mössbauer Spectroscopy, Spectrophotometry, FMR (EPR, VNA), PPMS (Heat capacity, AC Susceptibility, Resistivity), Transport Properties (DC and AC).

- Setup automation (Labview, LabWindows)
- Modelling and simulation of hysteresis.

Courses Taught:

- Physics for Engineers,
- Introduction to Nanoelectronics.

Grants and Contracts

Principal Investigator or member in more than 20 national and international research projects.

Selected projects:

- Grant PN II-TE (*Young researcher grant*) – CNCSIS „*Analiza procesului de comutare a stării de spin în dispozitive comutabile pe bază de materiale cu tranziție de spin*” (2015-2017) - (**PI: Aurelian Rotaru**)
- POS CCE Grant (*Infrastructure Grant*) – ANCSI-MFE (co-funded from European Regional Development Fund) – **31.460.699 RON (~ 7.069.820,00 Euro)** – “*Integrated Center for Research, Development and Innovation in Advanced Materials, Nanotechnology, and Distributed Systems for fabrication and control*” – MANSiD (April 2015 – December 2015), Contract No 671 / 09.04.2015 (**Management Team: Prof. Adrian Graur, Prof. Mihai Dimian, Prof. Dumitru Amarandei, Prof. Constantin Filote and Assoc. prof. Aurelian Rotaru**)
- PCCA Grant (*Partnership Grant*) – UEFISCDI – “*Flexible White OLED for Lighting Applications -FlexWOL*” (2014-2016) – **275 000 RON (~62 500 Eur)** (**Coordinator - Dr. Luminita Marin, Institute of Macromolecular Chemistry “Petru Poni” Iasi, Partner 1 - Dr. Aurelian Rotaru - Stefan cel Mare University of Suceava, Partner 2 - Bogdan Chiricuta - APEL LASER SRL;**)
- Bilateral Grant Romania-France (UEFISCDI-ANR) – „*Switchable molecules for nanoelectronics and spintronics – SwitchElec*” – (2013-2016) (**PI: Aurelian Rotaru (Rou) and Azzedine Bousseksou (Fr)**).
- Bilateral Grant Romania-Belgium (UEFISCDI-WBI) –, „*Thermal- and piezo-switchable molecular sensors based on alpha and beta-amino acids*”(2012-2014) (**PI: Aurelian Rotaru (Rou) and Yann Garcia (Be)**)
- Grant PN II-TE (*Young researcher grant*) – CNCSIS „*Analysis of cooperativity and low dimensionality effects in bistable molecular systems with applications in nanoelectronics*” (2011-2014) - (**PI: Aurelian Rotaru**)
- Grant BD – CNCSIS (*Doctoral grant*), (2007-2009) - (**PI: Aurelian Rotaru**).

Conference participations

I participated at more than 70 national and international conferences: 20 oral presentations (2 keynote speaker, 1 invited) and more than 50 poster presentations.

List of publications:

Number of ISI papers: 46

Number of citations (without self-citations): > 550

h-index: 13

2015

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- [46] C Lefter, R. Tan, J. Dugay, S. Tricard, G. Molnár, L. Salmon, J. Carrey, W. Nicolazzi, **A. Rotaru**, A. Bousseksou, “*Unidirectional electric field-induced spin-state switching in spin crossover based microelectronic devices*”, *Chemical Physics Letters*, **in press** (2015) doi: 10.1016/j.cplett.2015.11.036.
- [45] C. Lefter, R. Tan, S. Tricard, J. Dugay, G. Molnár, L. Salmon, J. Carrey, **A. Rotaru**, A. Bousseksou, “*On the stability of spin crossover materials: from bulk samples to electronic devices*”, *Polyhedron*, **102** (2015) 434–440
- [44] C-M Jureschi, B.-L. Pottier, J. Linares, P.-R. Dahoo, Y. Alayli, and **A. Rotaru**, “*Simulation of multi-steps thermal transition in 2D spin-crossover nanoparticles*”, *Physica B*, **2015 (in press)** doi:10.1016/j.physb.2015.09.037.
- [43] D. Chiruta, C-M. Jureschi, J. Linares, P-R Dahoo, Y. Garcia, **A. Rotaru**, “*On the Origin of Multi-Step Spin Transition behaviour in 1D nanoparticles*”, *Eur. Phys. J. B*, **88**: 233 (2015) 1-5
- [42] D. Chiruta, C-M. Jureschi, J. Linares, J. Nasser, **A. Rotaru** “*Analysis of spin crossover nanochains using parabolic approximation in the framework of Atom-phonon coupling model*”, *Physica B*, **476** (2015) 5151-5154.
- [41] C. Lefter, S. Tricard, H. Peng, G. Molnár, L. Salmon, P. Demont, **A. Rotaru**, A. Bousseksou, “*Metal substitution effects on the charge transport and spin transition properties of $[Fe_{1-x}Zn_x(Htrz)_2(trz)](BF_4)$ ($x=0, 0.26, 0.43$)*”, *Journal of Physical Chemistry C*, **119** (2015) 8522-8529.
- [40] T. Zhao, L. Cuignet, M. M. Dirtu, M. Wolff, V. Spasojevic, I. Boldog, **A. Rotaru**, Y. Garcia and C. Janiak, “*Spin-transition behavior of Fe(II) 1,2,4-triazole 1D chains embedded in pores of MCM-41*”, *J. Mater. Chem. C*, **3** (2015) 7802-7812.
- [39] M. M. Dîrtu, F. Schmit, A. D. Naik, I. Rusu, **A. Rotaru**, S. Rackwitz, J. A. Wolny, V. Schunemann, L. Spinu, and Yann Garcia, “*Two-Step Spin Transition in a 1D FeII 1,2,4-Triazole Chain Compound*”, *Chem. Eur. J.*, **21** (2015) 5843 –5855
- [38] C. Lefter, R. Tan, J. Dugay, S. Tricard, G. Molnár, L. Salmon, J. Carrey, **A. Rotaru**, A. Bousseksou, “*Light induced modulation of charge transport phenomena across the bistability region in $[Fe(Htrz)_2(trz)](BF_4)$ spin crossover micro-rods*”, *Phys. Chem. Chem. Phys.*, **17** (2015) 5151-5154
- [37] C.-M. Jureschi, J. Linares, **A. Rotaru**, M.-H. Ritti, M. Parlier, M.-M. Dirtu, M. Wolff and Y. Garcia, “*Pressure Sensor via Optical Detection Based on a 1D Spin Transition Coordination Polymer*”, *Sensors*, **15** (2015) 2388-2398
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2014

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- [36] D. Chiruta, C.-M. Jureschi, J. Linares, A. Graur, M. Dimian, and **A. Rotaru** – “Analysis of architecture effect on hysteretic behavior of 3D Spin Crossover Nanostructures”, *IEEE Transactions on Magnetism*, **50** (2014) 2900404
- [35] C.-M. Jureschi, I. Rusu, E. Codjovi, J. Linares, Y. Garcia and **A. Rotaru**, “Thermo- and piezochromic properties of $[Fe(hyprtz)]A_2 \cdot H_2O$ spin crossover 1D coordination polymer: towards spin crossover based temperature and pressure sensors”, *Physica B*, **449**, 47-51 (2014).
- [34] A. Railliet, A. Naik, **A. Rotaru** and Y. Garcia, “Mossbauer spectroscopy monitoring the spin transition of a Fe(II) 1D chain with a fluorinated 4-R-1,2,4-triazole”, *Hyperfine Interactions*, **226** (1-3), 223-227 (2014).
- [33] A. D. Naik, K. Robeyns, C. F. Meunier, A. F. Leonard, **A. Rotaru**, B. Tinant, Y. Filinchuk, B. Lian Su, and Y. Garcia, “Selective and Reusable Iron(II)-Based Molecular Sensor for the Vapor-Phase Detection of Alcohols”, *Inorg. Chem.*, **53** (3) (2014) 1263-1265
- [32] C. Lefter, I. A. Gural'skiy, H. Peng, G. Molnar, L. Salmon, **A. Rotaru**, A. Bousseksou, P. Demont, “Dielectric and charge transport properties of the spin crossover complex $[Fe(Htrz)_2(trz)](BF_4)$ ”, *Physica Status Solidi – RRL*, **8** (2014) 191-193
- [31] D. Chiruta, C.-M. Jureschi, J. Linares, Y. Garcia and **A. Rotaru**, “Lattice architecture effect on the cooperativity of spin transition coordination polymers”, *J. Appl. Phys.*, **115** (2014) 053523
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2013

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- [30] **A. Rotaru**, J. Dugay, R. P. Tan, I. A. Gural'skiy, G. Molnar, L. Salmon, P. Demont, J. Carrey, M. Respaud, A. Bousseksou, “Nano-Electro-Manipulation of Spin Crossover Nanorods: Towards Switchable Nanoelectronic Devices”, *Adv. Mater.*, **25** (2013) 1745-1749
- [29] A. P. Railliet, A. D. Naik, P. Castanho-Vaz, **A. Rotaru**, M. Grigoras, N. Lupu, J. Marchand-Brynaert, Y. Garcia, “Spin state tuning in FeII 1D coordination polymers made of 1,2,4-triazol-4-yl-propanoic and butanoic acids”, *Hyperfine Interactions*, **217** (2013) 67-72
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2012

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- [28] **A. Rotaru**, I. A. Gural'skiy, G. Molnár, L. Salmon, P. Demont, A. Bousseksou, “Spin State Dependence of Electrical Conductivity in Spin Crossover Materials”, *Chem. Commun.*, **48** (2012) 4163-4165.
- [27] **A. Rotaru**, A. Graur, G.-M. Rotaru, J. Linares, Y. Garcia, “Influence of Intermolecular Interactions and Size Effect on LITH-FORC Diagram in 1D Spin Crossover Compounds”, *J. Opt. Adv. Mater.*, **14** (2012) 529
- [26] M. M. Dîrtu, D. Gillard, A. D. Naik, **A. Rotaru**, Y. Garcia, “Weak cooperativity in selected iron(II) 1D coordination polymers”, *Hyperfine Interactions*, **205** (2012) 75-79
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- [25] M. M. Dîrtu, F. Schmit, A. D. Naik, **A. Rotaru**, J. Marchand-Brynaert, Y. Garcia, "Impact of ligand spacer and counter-anion in selected 1D iron(II) spin crossover coordination polymers", *Hyperfine Interactions*, **205** (2012) 69-73
- [24] A. P. Railliet, A. D. Naik, **A. Rotaru**, J. Marchand-Brynaert, Y. Garcia, "1D iron(II) spin crossover complexes with 1,2,4-triazol-4-yl-propanoic acid", *Hyperfine Interactions*, **205** (2012) 51-55

2011

- [23] **A. Rotaru**, F. Varret, A. Gindulescu, J. Linares, A. Stancu, J.-F. Létard, T. Forestier, C. Etrillard, "Size effect in spin-crossover systems investigated by FORC measurements, for surfacted $[\text{Fe}(\text{NH}_2\text{-trz})_3](\text{Br})_2 \cdot 3\text{H}_2\text{O}$ nanoparticles: reversible contributions and critical size", *Eur. Phys. J. B*, **84** (2011) 439–449
- [22] A. Gîndulescu, **A. Rotaru**, J. Linares, M. Dimian, J. Nasser, "Metastables states at low temperatures in spin crossover compounds in the framework of the atom-phonon coupling model", *Polyhedron* **30** (2011) 3186–3188
- [21] **A. Rotaru**, J.-H. Lim, D. Lenormand, A. Diaconu, J.B. Wiley, P. Postolache, A. Stancu, and L. Spinu, "Interactions and Reversal-Field Memory in Complex Magnetic Nanowire Arrays", *Phys. Rev. B*, **84** (2011) 134431
- [20] H. Djieutedjeu, P.A.J. Makongo, **A. Rotaru**, A. Palasyuk, N.J. Takas, X. Zhou, K. G. Ranmohotti, L. Spinu, C. Uher, P.F.P. Poudeu, "Crystal Structure, Charge Transport, and Magnetic Properties of MnSb_2Se_4 ", *Eur. J. Inorg. Chem.*, **2011** (2011) 3969
- [19] C. Chong, M. Itoi, K. Boukheddaden, E. Codjovi, **A. Rotaru**, F. Varret, F. A. Frye, D. R. Talham, I. Maurin, D. Chernyshov, M. Castro, "Metastable state of the photomagnetic Prussian blue analog $\text{K}_{0.3}\text{Co}[\text{Fe}(\text{CN})_6]_{0.77} \cdot 4.4\text{H}_2\text{O}$ investigated by various physical techniques", *Phys. Rev. B*, **84** (2011) 144102
- [18] M. Dîrtu, F. Schmit, A. Naik, **A. Rotaru**, J. Marchand, Y. Garcia, "Spin transition sensors based on a beta-aminoacid 1,2,4-triazole derivative", *Int. J Mol. Sci.*, **12** (2011) 5339-5351
- [17] B. Weber, W. Bauer, T. Pfaffeneder, M.M. Dîrtu, A.D. Naik, **A. Rotaru**, Y. Garcia, "About the Influence of Hydrogen Bonding on the Hysteresis Width in Iron(II) Spin Crossover Complexes", *Eur. J. Inorg. Chem.*, **2011** (2011) 3193–3206
- [16] A. Gîndulescu, **A. Rotaru**, J. Linares, M. Dimian, and J. Nasser, "Analysis of phase transitions in spin-crossover compounds by using "atom – phonon coupling" model", *J. Phys.: Conference Series*, **268** (2011) 012007
- [15] **A. Rotaru**, J. Linares, F. Varret, E. Codjovi, A. Slimani, R. Tanasa, C. Enachescu, A. Stancu, J. Haasnoot, "Pressure effect investigated with FORC diagram method on the spin transition compounds $[\text{Fe}_x\text{Zn}_{1-x}(\text{btr})_2(\text{NCS})_2] \cdot \text{H}_2\text{O}$, ($x = 1, 0.6$)", *Phys. Rev. B*, **83** (2011) 224107
- [14] J. Hu, T.J. Liu, B. Qian, **A. Rotaru**, L. Spinu, and Z.Q. Mao, "Calorimetric Evidence of Strong-Coupling Multiband Superconductivity in $\text{Fe}(\text{Te}_{0.57}\text{Se}_{0.43})$ Single Crystal", *Phys. Rev. B*, **83** (2011) 134521
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2010

- [13] H. Djieutedjeu, P. F. P. Poudeu, N. Takas, P. A. J. Makongo, **A. Rotaru**, K. G. Ranmohotti, C. Anglin; L. Spinu; J. Wiley, "Structural Distortions Driven Cooperative Magnetic and Semiconductor-to-Insulator Transitions in Ferromagnetic $FeSb_2Se_4$ ", *Angew. Chem-Int. Edit.*, **49** (2010) 9977
- [12] J.-H. Lim, **A. Rotaru**, S.-G. Min, L. Malkinski, and J. B. Wiley, "Synthesis of Mild-Hard AAO Templates for Studying of Magnetic Interactions between Metal Nanowires", *J Mater. Chem.*, **20** (2010) 9246-9252.
- [11] T.J. Liu, J. Hu, B. Qian, D. Fobes, Z.Q. Mao, W. Bao, M. Reehuis, S.A.J. Kimber, K. Prokes, S. Matas, D.N. Argyriou, A. Hiess, **A. Rotaru**, H. Pham, L. Spinu, Y. Qiu, V. Thampy, A.T. Savici, J. A. Rodriguez, and C. Broholm, "From $(\pi, 0)$ magnetic order to superconductivity with (π, π) magnetic resonance in $Fe_{1.02}(Te_{1-x}Se_x)$ ", *Nature Materials*, **9** (2010) 716-720.
- [10] MM. Dîrtu, C. Neuhausen, AD. Naik, **A. Rotaru**, L. Spinu, Y. Garcia, "Insights to the origin of the cooperative effects in the spin transition of $[Fe(NH_2trz)_3](NO_3)_2$: the role of intramolecular interactions", *Inorg. Chem.* **49** (2010) 5723-5736
- [9] A. Gindulescu, **A. Rotaru**, J. Linares, M. Dimian, J. Nasser, "Excited metastables electronic spin states in spin crossover compounds studies by atom-phonon coupling model: gradual and two-step transition cases", *J. Appl. Phys.*, **107** (2010) 09A959.

2009

- [8] **A. Rotaru**, F. Varret, E. Coddjovi, J. Linares, J. Nasser, A. Stancu, P. Guionneau, JF. Létard, "Hydrostatic Pressure Investigation of the Spin Crossover Compound $[Fe(PM-BiA)_2(NCS)_2]$ Polymorph I Using Reflectance Detection", *J. Appl. Phys.*, **106** (2009) 053515.
- [7] **A. Rotaru**, J. Linares, S. Mordelet, A. Stancu, J. Nasser, "Re-entrance Phase and Excited Metastable Electronic Spin States in Spin Crossover compounds Explained by Atom-Phonon Coupling Model", *J. Appl. Phys.*, **106** (2009) 043507
- [6] MM. Dîrtu, **A. Rotaru**, D. Gillard, J. Linares, E. Coddjovi, B. Tinant, Y. Garcia, Prediction of the Spin Transition Temperature in Fe(II) 1D Coordination Polymers: an anion based database", *Inorg. Chem.*, **48** (2009) 7838-7852.
- [5] **A. Rotaru**, MM. Dîrtu, C. Enachescu, R. Tanasa, J. Linares, A. Stancu, Y. Garcia, Calorimetric measurements of diluted spin crossover complexes $[Fe_xM_{1-x}(btr)_2(NCS)_2] \cdot H_2O$ with $M^{II} = Zn$ and Ni , *Polyhedron*, **28/13** (2009) 2531-2536.
- [4] **A. Rotaru**, A. Carmona, F. Combaud, J. Linares, A. Stancu, J. Nasser, "Monte Carlo simulations for 1- and 2D spin crossover compounds using the atom-phonon coupling model", *Polyhedron*, **28** (2009) 1684

2008

- [3] **A. Rotaru**, E.Coddjovi, J. Linares, J. Nasser, A. Stancu, "Size and pressure effect in the atom-phonon coupling model for spin crossover compounds", *J. Appl. Phys.*, **103** (2008) 07B908

2007

- [2] **A. Rotaru**, J. Linares, “*Atom-phonon coupling model for spin crossover compounds: Relaxation and Light Induced Thermal Hysteresis (LITH) simulations*”, **J. Opt. Adv. Mater.**, **9** (2007) 2724 – 2730.
- [1] M. M. Dîrtu, Y. Garcia, M. Nica, **A. Rotaru**, J. Linares, F. Varret, “*Iron(II) spin transition 1,2,4-triazole chain compounds with novel inorganic fluorinated counteranions*”, **Polyhedron**, **26** (2007) 2259–2263.
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15.12.2015

Aurelian ROTARU

