CURRICULUM VITAE

1. Name: SANDU
2. Surname: Titus
3. Professional address: 126A, Erou Iancu Nicolae Street, 077190, Bucharest, ROMANIA.
Email: titus.sandu@imt.ro .
4. Nationality: Romanian
5. Marital status: married
6. Education: Diplomas
Bucharest University, Faculty of Physics 1983 – 1989 University Diploma
Bucharest University, Faculty of Mathematics-Mechanics 1990-1997 University Diploma
Texas A&M University, din College Station, Texas, USA 1997 – 1999 M.S. in Physics, Nuclear Physicas
Texas A&M University, din College Station, Texas, USA 1999-2002 PhD in Physics, Condensed Matter Physics.

7. Scientific title: Senior Researcher I (SR I).
8. Professional experience:

Institution	**Period**	**Position**
Description		
Astronomical Institute of Romanian Academy	1990 - 1991	Physicist
Research		
Biotehnos S.A	1991 - 1992	Physicist
Research		
Institute of Physical-Chemistry		
"I.G. Murgulescu" of Romanian Academy	1992 - 1997	Researcher
Research		
Texas A&M University	1997 - 2002	Graduate student
Research and teaching		
University of Texas at Arlington	2003	Postdoc Researcher
Research		
Arizona State University	2003-2005	Postdoc Researcher
Research		
Universite de Montreal	2005-2007	Postdoc Researcher
Research		
International Centre of Biodynamics, Bucharest	2007-2010	SR II
Research		
National Institute for Research and		
Development in Microtehnologies, Bucharest	2010-2014	SR II
Research		
National Institute for Research and		
Development in Microtehnologies, Bucharest	2014-present	SR I
Research		

9. Specializations and qualifications:

1. *Jahn-Teller effect with applications in structure and dynamics of molecules and solids*, Institute of Physical-Chemistry, Bucharest, 1993.

2. *Parellel computation on super-computers, strategies and applications*, Universite de Montreal, 2007.

10. Postdoctoral experience:

1. Postdoctoral Researcher, University of Texas at Arlington (www.uta.edu), Electrical Engineering Department, *January 2003-May 2003.*

2. Postdoctoral Researcher, Arizona State University (www.asu.edu), Chemical and Materials Engineering Department, *May 2003-June 2005*.

3. Postdoctoral Researcher, University of Montreal (www.umontreal.ca), Chemistry Department, Montreal, Canada, *July 2005-July 2007*

11. Research experience:

Research topics: Electronic structure and optical properties of materials (crystals, molecules and low dimensional nanostructures): ab-initio and empirical methods. Quantum transport in nanostructures. Ab-initio molecular dynamics (Car-Parrinello). Dielectric response of living cells. Dynamical systems. Computational Physics. Plasmonics.

Referee for

1. 4th International Symposium on Nanostructures and Mesoscopic Systems (NanoMES 2003), Tempe Arizona (FEB 17-21, 2003); International Semiconductor Conference (CAS), since 2011;
2. Journals: Physical Review (A, B, Letters) since 2004, European Physics Letters since 2010, Physics Letters A since 2008, Plasmonics and Journal of Nanoparticles Research since 2011, Rom. J. of Information Sci. & Tech. (ROMJIST) since 2016.

12. Teaching and mentorship experience

Coordination of Diploma Theses for BS degrees

6. George Boldeiu, *Numerical methods for studying capacitance and electric fields*, Thesis, BS, Physics Faculty, Bucharest University, 2014.
5. Mihail Sochirca, *Theoretical and numerical studies of capacitance with applications in nanotechnology*, Thesis, BS, Electronics and Telecommunications Faculty, Bucharest Polytechnic University, 2013.
4. Bogdan Bita, *Dielectric response of biological cells interacting with electromagnetic fields*, Thesis, BS, Physics Faculty, Bucharest University, 2012.
3. Razvan Mihai Tuica, *Interaction of living cells with electromagnetic fields*, Thesis, BS, Electronics and Telecommunications Faculty, Bucharest Polytechnic University, 2012.
2. Iulian Starciuc, *Calculation of localizad plasmon resonances in metallic nanoparticles*, Thesis, BS, Electronics and Telecommunications Faculty, Bucharest Polytechnic University, 2012.
1. Alexandru Marin, *Calculation of electric field and polarizability for some combinations of spherical particles with applications in biology and plasmonics*, Thesis, BS, Electronics and Telecommunications Faculty, Bucharest Polytechnic University, 2011.

13. Foreign languages: English (very good), French (good).

14. Publications and conference presentations:

Publications in ISI ranked journals

34. **T Sandu**, C Tibeica, R Plugaru, O Nedelcu, N Plugaru, Insights into electron transport in a ferroelectric tunnel junction, Nanomaterials, 12(10), 1682 (2022).
33. D. Mladenovic, **T. Sandu**, D. Dragoman, " Electrical rectification in asymmetric graphene nanoribbons with pores", Physica E, volume 124, 114240 (2020).
32. **T. Sandu**, C. Tibeica, "A perspective on effective medium models of thermal conductivity in (ultra) nanocrystalline diamond films", Applied Surface Science, Volume 492, Pages 309-313 (2019).
31. **T. Sandu**, C. Tibeica, O. Nedelcu, M. Gologanu, "Modal Approach to the Theory of Energy Transfer Mediated by a Metallic Nanosphere", Rom. J. of Information Sci. & Tech. (ROMJIST), Vol. 22(1), pp. 3-13, (2019).
30. **T. Sandu**, M. Gologanu, R. Voicu, G. Boldeiu, V. Moagar-Poladian, "Modeling issues regarding thermal conductivity of graphene-based nanocomposites", Rom. J. of Information Sci. & Tech. (ROMJIST),Volume 21, Issue 1, 82-92, (2018).
29. C. Pachiu, **T. Sandu**, C. Tibeica, A. Avram, L. M. Veca, R. Popa, M. Popescu, R. Gavrila, C. Popov, V. Avramescu, "Fabrication and characterization of suspended microstructures of ultrananocrystalline diamond", Rom. J. of Information Sci. & Tech. (ROMJIST),Volume 21, Issue 1, 49-60, (2018).
28. R. C. Voicu, **T. Sandu**, "Analytical results regarding electrostatic resonances of surface phonon/plasmon polaritons: separation of variables with a twist", Proc. R. Soc. A 473, 20160796, (2017).
27. A. I. Istrate, M. Veca, F. Nastase, A. Baracu, R. Gavrila, F. Comanescu, V.Tucureanu, A. Dinescu, **T. Sandu**, "Scaling the graphene-silicon heterojunctions: fabrication and characterization", Rom. J. of Information Sci. & Tech. (ROMJIST),Volume 19, Issue 3, 282-294, (2016).
26. **Titus Sandu**, "The Rabi Hamiltonian in the Dispersive Regime", Romanian Journal of Physics, volume 60, Numbers 5-6, pp. 711-715, (2015). arXiv:1502.00514
25. George Boldeiu, Victor Moagar-Poladian, **Titus Sandu** "Dielectric Sensing with Back-Gated Nanowires", Rom. J. of Information Sci. & Tech. (ROMJIST), Volume 17, Number 4, 405–416, (2014).. arXiv:1504.05713
24. **Titus Sandu**, "Near-Field and Extinction Spectra of Rod-Shaped Nanoantenna Dimers", PROCE-EDINGS OF THE ROMANIAN ACADEMY, Series A, volume 15, Issue 4, pp. 338-345, (2014).
23**. Titus Sandu**, George Boldeiu, "How shape affects plasmonic properties of metallic nanospheres", Digest Journal of Nanomaterials and Biostructures, volume 9, Issue 3, pp. 1255-1262, (2014)
22**. Titus Sandu,** George Boldeiu, Victor Moagar-Poladian**,** "Applications of electrostatic capacitance and charging", J. Appl. Phys. 114 (22), 224904, (2013).

21. **Titus Sandu**, "Eigenmode Decomposition of the Near-Field Enhancement in Localized Surface Plasmon Resonances of Metallic Nanoparticles", Plasmonics, 8(2) 391-402, (2013);
20. Rodica Plugaru, **Titus Sandu**, Neculai Plugaru, "First principles study and variable range hopping conductivity in disordered Al/Ti/Mn-doped ZnO", Results in Physics, **2**, 190–197 (2012)
19. **Titus Sandu**, "Shape effects on localized surface plasmon resonances in metallic nanoparticles", J. Nanopart. Res., **14**, 905 (2012); DOI 10.1007/s11051-012-0905-6
18. **Titus Sandu,** Daniel Vrinceanu, and Eugen Gheorghiu, "*Surface Plasmon Resonances of Clustered Nanoparticles*," Plasmonics, **6**, 407–412, (2011).
17. **Titus Sandu,** Radu I. Iftimie, "*Bandgaps and band bowing in semiconductor alloys"*, Solid State Comm. **150**, 888-892, (2010).
16. **Titus Sandu,** Daniel Vrinceanu, and Eugen Gheorghiu, "*Linear dielectric response of clustered living cells*", Phys. Rev. E 81, 021913 (2010).
15. **Titus Sandu**, "*Dynamics of a quantum oscillator strongly coupled to a two-level system*" Physics Letters A **373**, 2753–2759, (2009).
14. **Titus Sandu,** "*Comments on Spin-dependent tunneling through a symmetric semiconductor barrier: The Dresselhaus effect"* Phys Rev. B **76**, 197301, (2007).
13. **Titus Sandu**, "*Dynamics of a two-level system coupled with a quantum oscillator: The very strong coupling limit*", Phys. Rev. B. **74**, 113405 (2006); cond-mat/0608483.
12. **Titus Sandu** and W. P. Kirk, "*Electronic and optical properties of beryllium chalcogenides/silicon"*, Phys. Rev. B. **73**, 235307 (2006); cond-mat/0608514.
11. **Titus Sandu**, Athanasios Chantis, and Radu Iftimie, "*Spin tunneling through an indirect barrier*", Phys. Rev. B. **73**, 075313, 2006; cond-mat/0601297.
10. **Titus Sandu**, "*Optical matrix elements in tight-binding models with overlap"*, Phys. Rev. B. **72**, 125105, 2005; cond-mat/0507204.
9. **Titus Sandu** and W. P. Kirk, "*Generalized band anticrossing model for highly mismatched semiconductors applied to* $BeSe_xTe_{1-x}$*"*,Phys. Rev. B.**72**, 073204, 2005; cond-mat/0507189.
8. **T. Sandu** and W. P. Kirk, "*The role of emitter quasi-bound state and scattering on intrinsic bistability in resonant tunneling diodes*", Physica E **22**/4, 815, 2004.
7. **Titus Sandu**, Gerhard Klimeck, and W. P. Kirk, "*Off-center electron transport in resonant Tunneling diodes due to incoherent scattering*", Phys. Rev. B **68**, 115320, 2003.
6. **T. Sandu** and W. P. Kirk, "*Intrinsic bistability and emitter scattering in resonant tunneling diodes*", Physica E **19**, 83 2003.
5**. T. Sandu**, V. Chihaia, and W. P. Kirk, "*Dynamic Squeezing in a Single-Mode Boson Field Interacting with 2-Level System"* J. Luminescence **101**, 101 2003**.**
4. **T. Sandu**, R. Lake and W.P. Kirk "*The effect of interface quality on* Si/SiO_2 *resonant tunnel diodes*", Superlatt. Microstruct. **30**, 201 2001.
3. V. Chihaia, **T. Sandu**, and M. Vass, "*Formation and Growth of Atomic Clusters. An Ab Initio Study for Small Clusters of Li (N= 2 - 8)*", Romanian Journal of Physics, Vol. **43**, No 5-6, 409-420, 1998**.**
2 Cristina Bercu, Liliana Lupan, Rodica Bandula, Marilena Vasilescu, **Titus Sandu**, and Laura Mitran, "*Study of the Molecular Properties of Proflavine, Acridine Yellow and Methylene Blue in Micellar Solutions*", Revue Roumaine de Chimie, **42**(8), 693, 1997.

1. C.Bercu, T.Oncescu, L.Lupan, R.Bandula, M.Vasilescu, **T.Sandu**, and L.Mitran, *"The Modification of the Molecular Properties of Some Dyes in Sodium Dodecyl Sulphate (SDS) Micellar Aqueous Solution"*, Fresenius J. Anal. Chem. **355**, 753 1996.

Articles in other peer-reviewed journals which are not ISI-ranked

1. A.N. Chantis, **Titus Sandu**, and J. L. Xu, "*Ab-initio calculations of spin tunneling through an indirect barrier*", PhysMath Central-Physics B, **1**, 13 (2008).

Articles in conference proceedings published and indexed in ISI databases

18. T. Sandu, C Tibeica, R Plugaru, O Nedelcu, N Plugaru, Physical modeling of ferroelectric tunnel junctions, 44h IEEE International Semiconductor Conference – CAS 2021, Romania, October 6-8, Proceedings, pp. 85-88 (2021).
17. T Sandu, OT Nedelcu, M Gologanu, Electromagnetic Interference Shielding Assessment from Mixing Formulae, 43rd IEEE International Semiconductor Conference – CAS 2019, Romania, October 7-9, Proceedings, pp. 221-224 (2020).
16. **Titus Sandu**, "Atomistic Models of Nanosystems", 42nd IEEE International Semiconductor Conference – CAS 2019, Sinaia, Romania, October 9-12, Proceedings, pp. 93-96 (2019).
15. **Titus Sandu**, Catalin Tibeica, Oana T. Nedelcu, Mihai Gologanu, "Analytical analysis of the plasmonic enhancement of resonance energy transfer in the vicinity of a spherical nanoparticle", 41th IEEE International Semiconductor Conference – CAS 2018, Sinaia, Romania, October 10-12, Proceedings, pp. 137-140, (2018).
14. **T. Sandu**, O. T. Nedelcu, C. Tibeica, "AC-electrokinetic behavior of biological cells beyond the dipole approximation", SPIE Proceedings Volume 10977, Advanced Topics in Optoelectronics, Microelectronics, and Nanotechnologies IX; 1097720 (2018)
13. C. Pachiu; C. Tibeica; A. Avram; M. Veca; **T. Sandu**; M. Popescu; R. Popa, Processing and mechanical characterization of ultrananocrisytalline diamond films for MEMS applications, 40th IEEE International Semiconductor Conference – CAS, Sinaia, Romania, Proceedings, pp. 235 – 236; (2017).
12. **Titus Sandu**, *Simpler description of the quantum dynamics in the ultra-strong coupling of the Rabi Hamiltonian*, 40th IEEE International Semiconductor Conference – CAS 2017, Sinaia, Romania, Proceedings, pp. 245-246, (2017).
11. **Titus Sandu**, George Boldeiu, Rodica Voicu, Mihai Gologanu, Modeling thermal conductivity of graphene-based nanocomposites, 40th IEEE International Semiconductor Conference – CAS 2017, Sinaia, Romania, Proceedings, pp. 209-212, (2017).
10. **Titus Sandu**, C. Tibeica, R. Voicu, A heuristic look at plasmon resonances in graphene nanodisks, 39th IEEE International Semiconductor Conference – CAS 2016, Sinaia, Romania, 2016, Proceedings, pp. 105-108, 2016.
9. **Titus Sandu**, "*Calculation of dielectrophoretic force acting on biological cells and on micro-and nanoparticles*", 38th IEEE International Semiconductor Conference – CAS 2015, Sinaia, Romania, 12-14 Oct. 2015, Proceedings,pp. 215 – 218, 2015

8. George Boldeiu, Victor Moagar-Poladian, **Titus Sandu** "Capacitance of Back-Gated Nanowires in Various Dielectric Embeddings", IEEE CAS Proceedings 2014, pp. 273-276.
7. **Titus Sandu** "Fluorescence and Fluorescence Quenching in a Two-Level System", IEEE CAS Proceedings 2014, pp. 269-271.
6. **Titus Sandu**, George Boldeiu, Rodica Plugaru, Charging and Capacitance of Conductors by the Integral Equation Approach, IEEE CAS 2013 Proceedings, IEEE Catalog Number: CFP13CAS-PRT, ISBN:978-1-4673-5670-1, ISSN: 1545-827X, vol 2, p. 289-292 (2013)
5. **Titus Sandu**, George Boldeiu, "Extinction Spectra and Near-Field Enhancement of Metallic Nanoparticles", ", IEEE Catalog Number: CFP12CAS-PRT, ISBN:978-1-4673-0736-9, ISSN: 1545-827X, vol 2, pp. 441-444 (2012).
4. **Titus Sandu**, V. Buiculescu, "Near-Field Enhancement of a Rod-Like Nanoantenna: Electrostatic Versus Fully Retarded Results", IEEE CAS Proceeding, IEEE Catalog Number: CFP12CAS-PRT, ISBN:978-1-4673-0736-9, ISSN: 1545-827X, vol 2, p. 415-418 (2012).
3. **Titus Sandu**, "A Boundary Integral Equation Method for Plasmon Resonances in Metallic Nanoparticles", IEEE CAS Proceeding, ISBN:978-1-61284-171-7, ISSN: 1545-827X, IEEE Catalog Number: CFP11CAS-PRT, vol. 2, p. 399-402, (2011).
2. **T. Sandu,** "Quantitative Assessment of the Single-Band Modeling the Silicon Based Resonant Tunneling Devices", IEEE CAS Proceeding, ISBN 978-14244-5781-6; ISSN 1545-827X, IEEE Catalog number: CFP10CAS-PRT, vol. 2, p. 443- 446, (2010)
1. **T. Sandu** and W. P. Kirk, "*Band bowing in* $BeSe_xTe_{1-x}$", AIP Conference Preceedings vol. 772, p. 175, 2005

PhD dissertation:

Titus Sandu
Numerical simulations of quantum devices
ProQuest Dissertations And Theses; Thesis (Ph.D.)--Texas A&M University, 2002; Publication Number: AAI3072527; ISBN: 9780493922515; Source: Dissertation Abstracts International, Volume: 63-11, Section: B, page: 5303.; 163 p.

Books and books chapters

Titus Sandu, "From biological cells to semiconductor and metallic nanoparticles: the same recipe with different flavors", **book chapter** in Series in Micro and Nanoengineering, vol. 24, Nanomaterials, Nanoparticles, Nanodevices, published by the Publishing House of the Romanian Academy, 2016

Articles in other indexed books:

5. T. Sandu, C. Tibeica, O.T. Nedelcu, M. Gologanu, "INTERMOLECULAR RESONANCE ENERGY TRANSFER IN THE PRESENCE OF METALLIC NANOPARTICLES: FINITE ELEMENT SIMULATIONS", Le sixième colloque

francophone PLUridisciplinaire sur les Matériaux, l'Environnement et l'Electronique (PLUMEE 2019) , Limoges (Franta), 09-14.04.2019.

4. **Titus Sandu**, "Computational Nanoelectronics with Non-equilibrium Green's Function Method", Proceedings of Francophone Multidisciplinary Colloquium on Materials, Environment and Electronics - PLUMEE - Volume 7, Issue No.1, pp. 52-58, (2017).

3. **Titus Sandu**, CONFOCAL SPHEROIDAL CAPACITORS: ANALYTICAL VERSUS BOUNDARY INTEGRAL EQUATION CALCULATIONS OF THEIR CAPACITANCE, PROCEEDINGS OF PLUMEE, Issue No.1 - Volume 4 (2014);

2. **Titus Sandu,** R. Plugaru, N. Plugaru, *On the Variable Range Hopping Conductivity in ZnO Doped Systems*,
PLUMEE 2013
Editors: George Culea, Cornel Anton, Delia Arnaud-Cormos, Patrick Leprat
Alma Mater, Bacău, Romania
ISSN : 2343–9092

1. **Titus Sandu**, "*Interaction of electromagnetic fields with heterogeneous systems: from living cells to metallic nanoparticles*"
PLUMEE 2011
Editors: Cornel Anton, Delia Arnaud-Cormos, Patrick Leprat, Valérie Madrangeas, Alina Melinescu, Claire Peyratout, Maria Preda, Audrey Prorot, Elsa Thune
Presses Universitaires de Limoges (Pulim), France
ISBN: 978-2-84287-539-8

Scientific reports

- B.C. Hyman, A. Azhari, C.A. Gagliardi, J.C. Hardy, **T. Sandu**, X. D. Tang, L. Trache, and R.E. Tribble,"$0^+ \rightarrow 0^+$ *Nuclear β-Decay of* ^{62}Ga" Progress in Research, 1997/1998, Cyclotron Institute, Texas A&M University, College Station, Texas, p. I-31.

- X.D. Tang, A. Azhari, C.A. Gagliardi, **T. Sandu**, L. Trache and R.E. Tribble "*Production of* ^{11}C *Radioactive Nuclear Beam with MARS"* Progress in Research 1998/1999, Cyclotron Institute, Texas A&M University, College Station, Texas, p. V-19.

- L. Trache, A. Azhari, H.L. Clark, C.A. Gagliardi, Y.-W. Lui, A.M. Mukhamedzhanov, **T. Sandu**, R.E. Tribble and F. Carstoiu "*Elastic Scattering Between Loosely Bound p-shell Nuclei: An Update*" Progress in Research 1999/2000, Cyclotron Institute, Texas A&M University, College Station, Texas.