# BUZATU DANIELA

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## CURRICULUM VITAE

Born (Draghici) on April 14 1958, in Fagaras, Brasov

1. **Education**

- 1991-1995 PhD in Technical Physics - Elementary particles Title: „*Stydy of interactions between antiprotons, nucleons and light nuclei at rest"* University „Politehnica" of Bucharest, Applied Science, Department of Physics, Splaiul Independentei 313, sector 6, Bucharest, Romania

- 1977-1982 Faculty of Physics , University Bucharest, Romania

Specialization : Physics engineer (Mathematics, General Physics,Mechanics, Electromagnetism, Optics, Quantum mechaniscs,Nuclear Physics, Physics of Elementary Particules, Physics of Solids, Defectoscopy :

**Positions**

- 2007-present Professor Physics Department, University Politehnica of Bucharest
- 2002-2007 Associoate Professor Physics Department,UniversityPolite hnica of Bucharest;
- 1997-2002 Lecturer Physics Department, University Politehnica of Bucharest;
- 1988-1997 Assitent Professor Physics Department, University Politehnica of Bucharest
- 1984- 1988 - physics engineer - Research institute for wastewater treatment . Bucharest, Romania , research work in transport phenomena in liquids
- 1982 - 1984 - professor of physics at high school – didactic work

**2**. **Research activity**

**1991-1996** I was working as researcher and principal researcher in the International Institute for Nuclear Research, Dubna- Russia , OBELIX collaboration, experiment PS-201; the thematic of research: *Study of interactions of antiprotons with the nucleons and light nuclei at low energy at*

*the OBELIX spectrometer* . The research activity was developed in the following directions: *1.the thoretical study of the Pontecorvo reaction; 2. the theoretical study for violation rule Okubo-Zweig-Iizuka* (OZI).

**1998-2001** I was working as associate researcher at Texas Christian University , USA , Chemistry department in chemistry-physics – irreversible thermodynamics field. The research activity was developed in the following directions:*1. The theoretical study of spinodal curve base on Wheeler-Widom model with three bodies interactions; 2. The theoretical and experimental study of multicomponent (ternary) diffusion (protein-water-choride salt)- Lysozyme-$Na_2SO_4$-water,; the determination of diffusion coefficients using the Gosting diffusiometer based on Rayleigh interferometry; the study of diffusion implications in proteic chrystal growth in microgravity conditions; 3. The theoretical and experimental study for viscosity and electrical conductivity for ternary solutions protein-water – salts , looking for electrical charge of protein*. (lysozyme).

**2011-2013** I was working researcher in the nanoparticles field in the Centre for Sufaces Science and nanotechnology from Politechnica University . The research activity was developed in the following directions:1. *Determination of the dielectric constant for insulating materials by an atomic force microscopy technique (AFM); 2. Determination of wetting properties of glycerol on silicon, native SiO2 and bulk SiO2 by Scanning Polarization Force Microscopy* (SPFM) 3. Determination of *contact angle and disjoining pressure of glycerol and sulfuric acid on highly oriented pyrolytic graphite and aluminium using SPFM*; 4.*Multifractal Analysis of $CoFe_2O_4$/Lauric Acid/DDS-Na/$H_2O$ Ferrofluid from Transmission Electron Microscopy* (TEM)

**2015-present** I was working in the radioprotection field using the Fluka interface

**Projects:**

**1**).CERES 4-163/2004 project, Strong correlated fermions investigated by many body methods , (2004-2006), responsable UPB
**2**.) CEEX- (SNCRF) 2 CEEX-06-11-3/25.07.2006, project, Complete Nuclear spectroscopy by reactions with light targets, fracmentations and fision , (2006-2009) , responsable UPB
**3**).COOPBIL project (International bilateral project Romania-Italia) C-18002/2006 (2006-2008) Title : Phase transitions and transport phenomena in amphiphilic ternary solutions, Foreigner partner: University Frederico II Naples, Italy
**4**) CERES 4-164/2004 project ; Title : Phase transitions in amphiphilic ternary systems ,responsable UPB
**5)** 5/5.1/ELI-RO project Title FLUKA-based radiation shielding and monitoring optimization at ELI-NP / ELIFLUKA 2016-2019 - - colaboration

**List of publications**

**1**.Cristina Stan, Maria Balasoiu, **Daniela Buzatu**, and C. P. Cristescu, Multifractal Analysis of $CoFe_2O_4$/Lauric Acid/DDS-Na/$H_2O$ Ferrofluid from Transmission Electron Microscopy Measurements, **J. Comput. Theor. Nanosci.** Volume 14, Number 4, April 2017, pp. 2030-2034(5)

**2.** A. Moldovan, **Daniela Buzatu**, M. Enăchescu, Determination of the local dielectric constant of insulating materials by an atomic force microscopy technique, **UPB Sci. Bull. Series** A. Vol.78, Nr 1**,** 257-264, **2016**, ISSN: 1223- 7027

**3. A.** Moldovan, P.M. Bota, I. Boerasu, D. Bojin, **Daniela Buzatu,** M. Enachescu, Wetting properties of glycerol on silicon, native SiO2 and bulk SiO2 by Scanning Polarization Force Microscopy, **Journal of Adhesion Science and Technology**, Vol. 28, Issue 13, 277-1287, **2014**, ISSN: 0169-4243

**4.** Moldovan, A; Bota, PM; Boerasu, I; Dorobantu, D; Bojin, D**; Buzatu, D;** Enachescu, M; "Wetting properties of glycerol on mica and stainless steel by scanning polarization force microscopy"; , **J.Optoelectron Adv.Mat 2013,** 15, 1105

**5.** Moldovan, A; Bota, PM; Poteca, TD; Boerasu, I; Bojin, D**; Buzatu, D;** Enachescu, M; "Scanning polarization force microscopy investigation of contact angle and disjoining pressure of glycerol and sulfuric acid on highly oriented pyrolytic graphite and aluminum"; **European Physical Journal Applied Physics 2013**, 64, 31302

**6.** Onofrio Annunziata, **Daniela Buzatu**, and John G. Albright , Protein Diffusiophoresis and Salt Osmotic Diffusion in Aqueous Solutions, **J. Phys. Chem**. B, **2012**, 116 (42), pp 12694–12705

**7.** Onofrio Annunziata, **Daniela Buzatu** , and John G. Albright, Effect of Lysozyme Proteins on the Mutual-Diffusion Coefficient of Sodium Chloride in Water, ***J. Chem. Eng. Data,*** **2011,** *56* (12), pp 4849–4852

**8. D.Buzatu**, F.D.Buzatu, R.P.Lungu, L. paduano, R.Sartorio, "On the determinationof thr spinodal curve for the system water+ chloroform$_+$ acetic acid from the mutual diffusion coefficients**", Rom.J.Phys**.,55 **, 2010**- 342-351, ISSN: 1221-146-x

**9.** F. D. Buzatu, R. P. Lungu, **D. Buzatu**, Roberto Sartorio, Luigi Paduano, " Spinodal composition for the system Acetic acid – chloroform – water at 25 °C." **, Journal of Solutions Chemistry** 38: 403–415, **2009**, (FI=1.228/2004) , ISSN: 0095-9782

**10.** F.D.Buzatu, **D.Buzatu**, Site density waves vs. bond density waves in the one-dimensional ionic Hubbard model in the high ionicity limit, **Rom.Journ.Phys**., Vol 53,No 9-10, pg. 1045-1052, **2008**, ISSN: 1221-146-x

**11. D.Buzatu**, F.D.Buzatu, R.Sartorio, "Partial molar volumes and diffusion coefficients for ternary system water-choroform-acetic acid at 25 C for different choices of solvent" **UPB. Sci.Bull**. Series A. Vol.70, Nr 4**, 2008**, ISSN: 1223- 7027

**12.** F.D.Buzatu, **D.Buzatu**, "One dimensional ionic Hubbard model in the high ionicity limit" **Romanian Reports in Physics**, Vol. 59, nr.2, pag.351-356**, 2007**, ISSN: 1221-146-x

**13. D.Buzatu**, F.D.Buzatu, L.Paduano, R.Sartorio"Diffusion coefficients in the ternary system water-chloroform-acetic acid at 25°C. " Journal of Solutions Chemistry, Vol. 36 , Nr. 11-12, **(2007**), (FI=1.228/2004) , ISSN: 0095-9782

**14. D.Buzatu,** A.M.Popovici, F.D.Buzatu, L.Paduano, R.Sartorio,Hydrodynamic and thermodynamic aspects of diffusion coefficients in the ternary system water chloroform-acetic acid at 25°C", **Sci.Bull.UPB**, Vol. 69, nr 3, pag 73-80, (**2007) ISSN: 1223-7027**

**15 .** R.Lungu, D.Huckaby, F.D.Buzatu, **D.Buzatu,** "Three-body and bonding effects on phase separation in a model binary solution" **Romanian Journal of Physics**, Vol.51, p. 769-782, (**2006**), **ISSN: 1221-146-x**

**16. D.Buzatu** O.Annunziata, E.Petrescu, C.Popa, F.D.Buzatu, "Dynamic light scattering: a useful optical method to probe common-ion effects in protein - salt aqueous solutions" , **J.Optoelectron Adv.Mat,** Vol.7 (6), p 3161-3168, **(2005), ISSN:1454-4164** (**FI=1.138/2005**

**17.** Onofrio Annunziata, **D. Buzatu**, John G. Albright "Protein Diffusion coefficients determined by Macroscopic-Gradient Rayleigh Interferometry and Dynamic Light Scattering", **Langmuir**, Vol 21, pag. 12085-12089, **(2005**), ISSN:0743-7463 (FI=3.707/2005) **.**

**18. Buzatu,** Popa, E.Petrescu, F.D.Buzatu, "Determination of the diffusion coefficients for ternary systems from Gosting difussiometer; apparatus and method**", J.Optoelectron Adv.Mat,** Vol.7, Nr.2, 1079-1090, **(2005**), **ISSN:1454- 4164** (**FI=1.138/2005**)

**19. D. Buzatu,** C.Popa, E. Petrescu, F.D. Buzatu, « Conductimetric methtod applied to Lysozyme and Lysozyme-NaCl-Water Solution **», Revue Roumaine de Chimie,** Vol 50, Nr 3, pag. 193-199, **(2005**), **ISSN: 0035-3930** (**FI=0.199/2004)**

**20. D. Buzatu,** C.Popa, E.Petrescu, F.D.Buzatu, « Conductimetric methtod applied to ternary Lysozyme-KCl-Water Solution and Lysozyme-NH4Cl-Water Solution », **Revue Roumaine de Chimie,** Vol. 50 (3) , pag. 185-191, **(2005**), **ISSN: 0035-3930** (**FI=0.199/2004)**

**21. D. Buzatu,** E. Petrescu, C. Popa, F.D.Buzatu " Conductivity and viscosity measurements for binary lysozyme chloride aqueous solution and ternary lysozyme-salt-water solution", **Revista de Chimie,** Vol. 56 (1), pag. 61- 65, (**2005) , ISSN: 0034-7752** (**FI=0.308/2004)**

**22.** F.D.Buzatu, R.P.Lungu, D.A Huckaby, **D. Buzatu, "**A Three component Molecular Model with Bonding Three-Body Interactions", **Romanian Journal of Physics**, Vol. 50, Nr.3-4, pag. 417-425, **(2005**), **ISSN: 1221-146-x**

**23.**. **D.Buzatu,** E.Petrescu, C.Popa, F.D.Buzatu, J.G.Albright, "Extraction of Thermodynamic Data from Ternary Diffusion Coefficients of Lysozym Chloride in Water and Aqueous Na2SO4", **Revista de Chimie,** Vol. 55 (10) Pag. 759-763, **(2004)**, **ISSN: 0034-7752** (**FI=0.308/2004**)

**24. D. Buzatu,** « Rayleigh optical interferometric method applied to ternary Lysozyme-Na2SO4-Water Solution », **Sci.Bull.UPB,** Vol.66, No. 2-4, pag. 85-94, (**2004)**, **ISSN: 1223-7027**

**25. D. Buzatu,** E.Petrescu, C. Popa, F.D. Buzatu, J.G. Albright, " Measurements of multicomponent diffusion coefficients for lysozyme chloride in water and aqueous Na2SO4", **Revista de Chimie**, Vol. 55 (6), pag. 435-438, **(2004**), **ISSN: 0034-7752** (**FI=0.308/2004**)

**26.**. **D. Buzatu "** Conductimetric applied to binary Lysozyme Chloride-Water Solution", **Sci.Bull. UPB,** Vol. 66, No.2-4, pag. 47-56, (**2004), ISSN: 1223-7027**

**27.** F.D Buzatu, **D. Buzatu,** "Antiferromagnatic-like ordering in a model ternary solution**", Romanian Journal of Physics,** Vol. 48, Supplement I, P.pag 521-532, (**2003**), **ISSN: 1221-146-x**

**28.** F.D. Buzatu, **D. Buzatu,** J.G. Albright, "Spinodal curve of the Wheeler-Widom model with three-body interactions on the Bethe Lattice**", Romanian Journal of Physics**, Vol. 47, nr. 3-4, pag. 359-370, **(2002**) , **ISSN: 1221-146-x**

**29.** F.**D. Buzatu, D. Buzatu, "Effective spinodal curve of a three-component molecular system", Romanian Journal of Physic**s, Vol. 47, nr. 1-2, pag. 293-305, (**2002), ISSN: 1221-146-x**

**30.** F.D. Buzatu**, D. Buzatu**, J. G. Albright, "Spinodal curve of a model ternary solution", **Journal of Solution Chemistry**, Vol. 30, No 11, pag. 969-983**,** (**2001**) **ISSN: 0095-9782** (**FI=0.966/2001**

**31.**D. Huckaby, A. Pekalski, **D. Buzatu**, F.D. Buzatu, "Amphiphile-rich phase in a model ternary solution on the honeycomb lattice", **Journal of Chemical Physics**, Vol 115, No 14, pag. 6775-6779, **(2001),** ISSN:0021-9606 (FI=3.147/2001)

**32. D. Buzatu** F.M. LEV, "Manifestation of the Delta ++ resonance in the reaction antiproton-deuteron", Phys. Of Atomic Nuclei 60, 1186-1192, (**1997**) **ISSN: 1063-7788 (FI=0.208/1997)**

**33. D. Buzatu,** F.M. LEV, "J/Psi decays as a test of OZI-rule violation in nucleon-antinucleon annihilation", **Hadronic Journa**l 20, 615-619, (**1997**), **ISSN:0162-5519 (FI=0.96/(1974-2001)**

**34. D. BUZATU,** F.M. LEV, " Okubo-Zweig-Iizuka rule violation in the reaction antiproton-proton with Phi meson production"- Replay ", **Physical Rev. C** 53, 1453-1453, **(1996), ISSN:0556-2813** (**FI=2.07/(1974-2001)**

**35. Buzatu**, F.M. LEV, "Some aspects of the OZI-rule violation in the reaction proton-antiproton resulting Phi –pi mesons production", **Physics of atomic Nuclei** 59(2), 280-288, (1996) ( traducere din Yadernaia Fizika 59, 300-308**, 1996**) **ISSN: 1063-7788 (FI=0.28/(1994-2001**

**36.D. Buzatu,** F.M. LEV, "The problem of the OZI-rule violation in the reaction antiproton-proton with the production of f' resonance", **Physics Lett. B** 359 (3-4) , 393-396, (**1995**) **, ISSN: 0370-2693)** (**FI=3.62/1974-2001**

**37. D. Buzatu,** F.M. LEV, "The OZI-rule violation in the reaction antiproton-proton with the production of Phi meson", **Physical Rev. C** 51 (6) , 2893-2895, **(1995**), **ISSN:0556-2813** (**FI=2.07/(1974-2001)**

**38. D. Buzatu,** F.M. LEV, "Violation of the Okubo-Zweig-Iizuka rule in the annihilation of slow antiprotons on deuteron", **Physics of Atomic Nuclei** 58(3), 480-483, (1995) ( translated from Yadernaia Fizika, 58 (3), 531-535, 1995 "О нарушении правила Окубо-Цвейга-Изуки в аннигиляции медленных антипротонов на дейтроне") , **ISSN: 1063-7788 (FI=0.162/1995)**,

**39. D. Buzatu,** F.M. LEV*, "A simple mechanism of the Pontecorvo reaction*", **Phys.of Atomic Nuclei** in traducere USA 57(6), 1000-1003, (1994) (traducere Yadernaia Fizika 57, 1061-1064, 1994 *"Простой механизм реакции Понтекорво"* ), **ISSN: 1063-7788 (FI=0.068/1994)**

**40. D. Buzatu,** F.M. LEV, "*On the role of KK* intermediate states in Okubo- Zweig-Iizuka -rule violating reactions of antiproton annihilation*", **Physics Lett.B** 329(1), 143-148, (**1994**), **ISSN: 0370-2693 (FI=3.62/(1974-2001 )**

**41. Buzatu,** T.CRETU, *"Simple mechanism of Pontecorvo of Pontecorvo reaction",* **Sci.Bull.UPB Series A** 56, NR. 3-4, 105-109, **(1994**), **ISSN: 1223-7027**

**9 books** – **3 courses** of physics for students, 4 applications in physics for students , **1 monography**: **D. Buzatu** & F.M. Lev, "*Problems with the OKUBO-ZWEIG-IIZUKA rul violation in nucleon-antinucleon annihilation at rest*", Phys of Part Nuclei 29 (1), pag.212-251, (1998,) Editura ECIAIA, DUBNA, Rusia, FI=0.49, ISSN:1063-7796 and **1 scientifical book D.Buzatu**, E. Petrescu, F.D. Buzatu "*Optical and electronical methods applied to ternary protein solutions*" Ed. BREN , **107** (2007) Bucharest, ISBN 978-973-648-641-8 .

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**Courses** :

- General Physics
- Master level : Technical Physics – Nuclear Physics, Laser and Plasma