



Eugen Gheorghiu

International Centre of Biodynamics www.biodyn.ro
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Education :PhD in Theoretical Physics, 1994, Institute for Atomic Physics - Bucharest, Romania

Professional Experience

2000–present Director, International Centre of Biodynamics, Bucharest
1997 - 2000 Director, National Institute for Research and Development for Biotechnologies– UNESCO Centre for Biodynamics, Bucharest, Romania
1996-1997 Visiting Professor, Institute for Chemical Research (under JSPS), Kyoto University, Japan
1995-1996 Scientific Director National Institute for Research and Development for Biotechnologies (NIBT), Bucharest, Romania and Head of Department of Equipments, Sensors and Informatics for Biotechnologies, within NIBT.
1993– present Professor/Senior Researcher 1st degree
1991–1996 Head of Biophysics Laboratory -since 1993, Centre of Biotechnologies – BIOTEHNOS, Bucharest, Romania
1990–1994 Associate Lecturer (since 1993- Associate Professor), University of Bucharest, Faculty of Physics, Bucharest, Romania
1989–1991 Scientific Researcher, I.C.P.E.A.R. – Biophysics Laboratory, Bucharest, Romania
1984–1989 Biophysicist and Scientific Researcher (since 1988), Radiation Biophysics Laboratory, Bucharest, Romania, Institute of Oncology

Research Interests include modeling & data analysis and experimental aspects of non-invasive analysis of living cells and bio-interfaces using dielectric and optical (SPR, TIRF) assays. The goal is to assess gentle (non-lethal) bioeffects of various stimuli including environmental ones using time based electro-optical (on bioaffinity and cellular platforms) or ultrasound (on fish population) assays.

Professional Honors, Fellowships, and Affiliations. Invited Professor, C.N.R.S. – L.C.P.E. Nancy, France, February.1996: seminars and lectures on non invasive methods for monitoring and non-linear analysis of cell cycle; JSPS Fellow (visiting Professor) at University of Kyoto, Japan, 1996 – 1997: Development of novel, non-invasive methods for monitoring cell cycle

Awards: “Stefan Procopiu” Award for Physics of the Romanian Academy, 1995

Teaching: University of Bucharest; Coordinator of the Master Program in Biodynamics, Faculty of Biology; Courses: „Introduction in (non)linear data analysis” and „ (Bio)Impedance Spectroscopy and related electrical methods to investigate bio-systems”;
Other Courses: “Thermodynamics of Irreversible Process and Applications of Nonlinear Phenomena to Biophysics”;

PhD Adviser University of Bucharest- since 2004

Invited Seminars on bio-mpedance, biodynamics and electr-optical biosensors presented at: EC JRC Ispra (Italy), University of Hasselt (Belgium), University of Montpellier, University of Nancy and University of Perpignan (France), University of Wuppertal and Max Plank Institute for Biophysics-Frankfurt (Germany), Kyoto University (Japan), Karolinska Institute- Stockholm (Sweden), National University of Singapore, Emory University and SUNY-Binghamton (US)

Publications (3 book chapters, 20 invited lectures and over 30 oral presentations at conferences).

Recent Relevant

1. T. Sandu, D. Vrinceanu, E. Gheorghiu*, “Surface Plasmon Resonances of Clustered Nanoparticles”, *Plasmonics*, 6 (2011), 407–412
2. T. Sandu, D. Vrinceanu, E. Gheorghiu*, “Linear dielectric response of clustered living cells”, *Phys. Rev E* 81 (2010), 0219131-02191311
3. M. Gheorghiu, A. Olaru, A.Tar, C. Polonschii, E. Gheorghiu*, “Sensing based on assessment of non-monotonous effect determined by target analyte: case study on pore forming compounds”, *Biosensors and Bioelectronics*, 24 (2009) 3517–3523
4. A. Olaru, M. Gheorghiu, S.David, T Wohland, E. Gheorghiu*, “Assessment of the multiphase interaction between a membrane disrupting protein and a lipid membrane”, *J. Phys. Chem. B*, 113 (2009), 14369–14380
5. E Gheorghiu*, M Gheorghiu, S David, C Polonschii, "Biodynsensing: sensing through dynamics of hybrid affinity / cellular platforms; towards appraisal of Environmental and Biological Risks of Nanobiotechnology" in *Silicon Versus Carbon Fundamental Nanoprocesses, Nanobiotechnology and*

Risks Assessment, NATO Science for Peace and Security Series B: Physics and Biophysics , Magarshak, Yuri; Kozyrev, Sergey; Vaseashta, Ashok K. (Eds.) 2009, ISBN: 978-90-481-2522-7,

6. C. Balan, D. Broboana, E. Gheorghiu, L. Vekas, Rheological characterization of complex fluids in electro-magnetic fields, *Journal of Non-Newtonian Fluid Mechanics* 154 (2008) 22–30
7. M. Gheorghiu, S. David, C. Polonschii, E. Gheorghiu* "Sensing at nanoscale via structured interfaces" *Eur Biophys J.* (2007) 36 S157
8. O Sadik, H. Wu, E. Gheorghiu*, D. Andreescu, C.M. Balut, M. Gheorghiu, D. Bratu , "Fast Differential Dielectric Spectroscopy for Monitoring the Dynamics of Bimolecular Reactions", *Analytical Chemistry*, 74 (2002), 3142-3150

Other significant

- K. Asami, E. Gheorghiu, T. Yonezawa, "Real-time Monitoring of Yeast Cell Division by Dielectric Spectroscopy", 76, *Biophys. J.* (1999), 3345-3348
- E.Gheorghiu, "On the limits of Ellipsoidal Models when Analyzing Dielectric behaviour of Living Cells: Emphasis on Red Blood Cells", *Annals of The New York Academy of Sciences*, 873, (1999) 262-268
- E. Gheorghiu, K. Asami, "Monitoring Cell Cycle By Impedance Spectroscopy: Experimental and Theoretical Aspects", *Bioelectrochem. Bioenerg*, 45, (1998) 139-143
- D. Vrinceanu, E. Gheorghiu, "Shape effects on the dielectric behaviour of arbitrary shaped particles in particular references to biological cells", *Bioelectrochem. Bioener*, 40, 167, (1996);
- E. Gheorghiu, "The dielectric behaviour of suspensions of spherical cells: a unitary approach" *J. Phys. A: Math. Gen.* 27, 3883 (1994)

Patents and Patent Applications:

1. RO Patent Application A00136/2011: "Method to assess the amount of target analytes by controlled periodic actuation", Author: E. Gheorghiu
2. RO Patent Application A00135/2011: "Device to assess the amount of target micro-organisms by controlled periodic actuation" Authors: E. Gheorghiu, S David, C. Polonschii, D.Bratu
3. RO Patent Application A00294/2011: "Platform and method to monitor the quality of an aquatic environment based on analysis of the behavior of a fish population", Authors: E. Gheorghiu, C. Polonschii, D. Bratu
4. RO patent no. 120867/14.03.2008: "Quantitative assessment of (bio)sensors by analysis of nonlinear frequency response", Authors: E. Gheorghiu, M. Gheorghiu, C. Balut, D. Bratu
5. RO patent no. 120790/01.04.2003: „Method to detect analytes by analyzing the polarization impedance of the transducer/ sample interface”, Authors: E. Gheorghiu, M. Gheorghiu, D. Bratu, A. Ursu
6. RO patent no. 117877/30.08.2002: "Method for detecting target analytes in liquid media", Authors: E. Gheorghiu, M. Gheorghiu, C. Balut, D. Bratu
7. RO patent no. 117986/29.11.2002: "Fast, high accurate method to measure AC impedances", Authors: E. Gheorghiu, D. Bratu, M. Gheorghiu, C. Balut

International Collaborations include: Prof. K. Asami (Kyoto University, Japan), Prof. M. Barboiu (IEM-Montpellier), Prof. K Fendler (Max Plank Institute for Biophysics), Dr. A. García-Martín, (Spanish Council of Scientific Research, Madrid), Prof. C. Ghommidh, (University of Montpellier), Prof. J.-L. Marty (University of Perpignan), Prof. M. Mascini (University of Florence), Dr. F. Rossi (JRC-ISPRA), Prof. A. Ruckenstein (Boston University), Prof. O.A Sadik (SUNNY-Binghamton), Prof. Anthony Turner, (Linköping University, Sweden), Prof G. Thouand (University of Nantes, France), Prof. J. Voeroes (ETH, Zurich), Prof. P. Wagner (Limburgs Universitair Centrum), Prof T. Wohland (National University of Singapore)

Synergistic Activities

- Expert of European Commission- Evaluator of Proposals on (nano)biosensing
- Review Panel member- European Science Foundation - EuroBioSAS
- Member of the National Committee of Ethics in Scientific Research
- Guest Editor of Journal: *Bioelectrochemistry and Bioenergetics*
- Member of Editorial Board of: *Romanian Journal of Biophysics, International Journal of Biotechnology, Journal of Electrical Bioimpedance*
- Member of Evaluation Commissions of PhD thesis of: University of New South Wales, Sydney, Australia, National University of Singapore, Babes-Bolyai University, Cluj-Napoca and Politehnica University of Bucharest.

- Promoter of 15 International Research Grants most representative: **2 FP7: “PROARGUS” (coordinator)** (Contract-PIRG08-GA-2010-277126), **NanoMagma** (Contract - NMP3-SL-2008-214107) ; **2 FP6: ROBIOs (coordinator)** Contract- INCO-2004-ACC-RSTP **CHARPAN**, (Contract - IP 515803) **and 1FP5: Aframilk-** (Contract- GRD1-2000-25801)
- Co-Director of 12 National Research Grants (during the last 10 years),
- Member of the Steering Committee ESOF2008 (Barcelona)