

CURRICULUM VITAE



PERSONAL DATA

Surname: VLAD
First name: Ionel Valentin
Date/Place of Birth: 22 September 1943 / Bucharest, Romania
Nationality: Romanian
Gender: M
Marital status: Married to Adriana Vlad (nee Popescu, Professor of Information Theory at Univ. "Politehnica" of Bucharest); one daughter, Ana Gabriela Vlad

OFFICE:

- Romanian Academy

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- National Institute for Laser, Plasma and Radiation Physics (INFLPR)

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EDUCATION AND TRAINING

Graduation:

Romania 1966, Polytechnic Institute of Bucharest, Dept. Electronics and Telecom,
Diploma supervised by Prof. G. Cartianu, Member of Romanian Academy
Post-graduation studies at University of Bucharest, Dept. Physics, with Acad.
S. Titeica and Prof.M. Gavrilă; Stage at CGE – Lab. Marcoussis and Université de
Paris VI, Prof. M. Francon

Dr. Eng. :

Romania 1972, Polytechnic Institute of Bucharest, Dept. Electronics and Telecom,

Thesis "Methods of information processing in conventional and real-time holography" supervised by Prof. G. Cartianu, Member of Romanian Academy

Languages: Romanian (native language), English (fluent), French (fluent), German (good), Russian (good), Italian (good)

CAREER/EMPLOYMENT

Jan. 1966 - present: Institute of Atomic Physics, Bucharest (IAPB), Lab. "Optical Methods in Nuclear Physics", lead by Prof. Ion Agarbiceanu, Member of Romanian Academy; IAPB - Dept. of Lasers (1966-1977) – Scientific Researcher; Institute of Physics and Technology of Radiation Devices - IFTAR (1977-1997) – Scientific Researcher III, Head of Lab. "Holography and Optical Information Processing" (until 1990); National Institute of Laser, Plasma and Radiation Physics (INFLPR) - Dept. Lasers (1997-present), Senior scientific researcher grade I, Head of Lab. "Nonlinear and Information Photonics" (1991-present);

1991 - 2002: President of Physics Commission of the Consultative College for R&D in Romania

1996 - 2002 Vice-president of the Scientific Council of the Institute of Atomic Physics;

2002 - 2005: Co-Director of the Center of Excellence in Photonics (ROCEP), Institute of Atomic Physics, Bucharest, Romania;

2004-2008 National project director of EU Network of Excellence "**Nanophotonics for Molecular-Scale Technologies**" ("PHOREMOST IST 2-511616"); National representative in the projects COST P2, COST P8 and COST MP0702 "Towards functional sub-wavelength photonic structures" (2007)

1990 - present: Professor (assoc.) at the Bucharest University, Fac. Physics and Doctoral School of Physics; supervised 7 PhD students

RESEARCH INTERESTS

- Main field: Optics and Photonics
- Other fields: Solid State Physics, Statistical Physics, Interaction of Radiation with Matter
- Current research interests:

Basic: Nonlinear Optics, with particular interests in the theory and the experimental observation of spatial solitons and soliton waveguiding of ultrashort (femtosecond) laser impulses; wave mixing and phase conjugation in photorefractive crystals and optical fibers, nonlinear optical microscopy; stimulated light scattering; holography.

Nanophotonics, with particular interests in the enhancement of nonlinear response of nanostructured materials, size-dependent properties (semiconductor quantum dots, periodic structures etc) and stimulated light emission (laser) at molecular scale.

Applied: Demonstration of new/enhanced functionalities for information technologies; methods for modeling and image processing in various optical phenomena; new laser instrumentation

INTERNATIONAL PROJECTS, VISITS AND POSITIONS

2009, 2010 Ecole Polytechnique – LOA, Palaiseau and Thales – *Project of Ultra-high intensity Lasers*
-Visiting Professor

- 2008 ENS Paris and Cachan -Visiting Professor
- 2004 Univ. Cork (Ireland) – Kick-off meeting of EU Net. of Excellence “*Nanophotonics for Molecular-Scale Technologies*” (“PHOREMOST IST 2-511616”) National project director
- 2002 Imperial College-Londra (Nov) – Co-authoring and publishing (with M. Damzen, V. Babin and A. Mocofanaescu) the book “*Stimulated Brillouin Scattering. Fundamentals and applications*”, *Institute of Physics Press, London* - Visiting professor
- 1999 US Air Force Res. Lab., Hanscom, MIT, Harvard, Boston and OSA Annual Meeting, Santa Clara-Silicon Valey (USA) - Visiting scientist with a WOS contract, funded by the European Agency for Aerospace R&D – *Adaptive interferometry with photorefractive crystals for studies on the diffusion of liquids in conditions of zero gravity*
- 1997, 1998 ICTP-Trieste and Università degli Studi “La Sapienza” di Roma, with the TRIL grants A7 and 5512.NI.H8, awarded by ICTP - *Experimental observation and theoretical study of spatial solitons in photorefractive crystals with strong optical activity* –Visiting professor - collab. with Prof. M. Bertolotti and Prof. E. Fazio
- 1994-2000 Max Planck Institut für Quantenoptik, Garching – Visiting professor, collab. with Prof. H. Walther; from 1996, external collaborator – *Study of the space charge distribution in photorefractive crystals with a highly sensitive atomic force microscope for information storage with ~ 30 photons/bit.*
- 1993 Centro de Investigaciones en Optica (Mexico) - Invited professor (Catedra Patrimonial de Excelencia, offered by the Mexican Federal Government), collab. with prof. D. Malacara, C.I.O. Mexico – *Direct spatial reconstruction of the optical phase from images with phase modulation* (invited paper in *Progress in Optics*, Ed. E. Wolf, Vol.23, 1994)
- 1991 Chiba University (Japan) – Invited professor with a JSPS Fellowship, collab. with Prof. J. Tsujiuchi – research on *neural optical processors using holographic storage of images in photorefractive crystals*
- 1984 Technische Universität Darmstadt, Inst. für Angewandte Physik - Visiting scientist, with a DAAD (Deutscher Akademischer Austauschdienst) Grant, collab. with Prof. T. Tschudi for research in *real-time holography and optical phase conjugation*
- 1970 CGE – Lab. Recherche Physique de Base (Marcoussis) et Université de Paris VI, Visiting scientist, collab. with Prof. M. Francon (6 months) - Research stage in *lasers and holography* (recommended by Prof. I. Agarbiceanu)

Short research visits (2 up to 3 weeks) abroad under the exchange agreements of the Romanian Academy:

- Inst. of Technical Physics “A.F. Ioffe” St. Petersburg, for research in *holography, ultra-fast optical phase conjugation, wave mixing in photorefractive crystals and measurement of vibrations with amplitudes in the range of pico-meters* (with Prof. Yu. I. Ostrovski and Prof. M. P. Petrov) (1977-89)
- Imperial College, London, for research in “*Adaptive interferometry and dynamic interconnections using photorefractive crystals*” (bilateral collaboration signed by the presidents of Romanian Academy and Royal Society (1991-96 and 1996-2002)

Research visits (3-5 weeks) abroad under the other exchange agreements:

- Università degli Studi “La Sapienza” di Roma – Prof. M. Bertolotti and Prof. E. Fazio, Visiting Professor and co-director of Projects no. 36/2000 and no.18/2005 of the Inter-government Agreement in R&D between Romania-Italia (1999-2003; 2004-2008)
- International Center of Theoretical Physics (ICTP, Trieste, Associate Member, 1995-2002 and Senior Associate Member, 2003-2008)

- Forschungszentrum Karlsruhe (FZK), for research by optical methods of flows for nuclear reactor cooling (contract funded by BMFT-Germany, 1995-99)
- CERN Geneva (in the frame of the program West-East, 1995)

INVITED SPEAKER AND CONFERENCE CHAIRMAN

- 2010 33rd Intl. Semiconductor Conference, Sinaia (Invited paper), Proc. IEEE No.CFP10CAS-PRT
- 2008 EOS Topical Meeting on Photonic Devices, Utrecht
- 2007 Congress of the European Universities, Rome
- 2005 Conf "Advanced Topics in Optoelectronics, Microelectronics and Nanotechnologies II"
- 2006 Chairman of the 8th Intl. Conference of Optics- ROMOPTO 2006, University "L. Blaga", Sibiu
- 2004 Congress Photonics Europe, Strasbourg (April) and Conf. ICPEPA-2, Lecce (Italia)
- 2003 Chairman of the 7th Intl. Conference of Optics- ROMOPTO 2006, University "Ovidius", Constanta; Plenary and invited lectures, Proc SPIE **5581**, 51 and 571(2004)
- 2002 Congress ICO-19, Florence, Italy - Chairman of Session "Photorefractive Materials"
- 2000 Chairman of the 6th Intl. Conference of Optics- ROMOPTO 2000, Bucharest; Invited lecture: Proc. SPIE, **4430** 418(2001)
- 1999 CLEO/Europe-EQEC Munchen, Chairman of Session "Nonlinear Optical Materials"
- 1998 NATO Adv. Res. Workshop "Unconventional Optical Elements for Information Storage, Processing and Communications", Jerusalem, Israel, (19-21 Oct); Invited paper in: E. Marom et al. (Eds.), "Unconventional Optical Elements...", Kluwer Academic Publ., Dordrecht (2000), pp.51-60
- 1997 Chairman of the 5th Intl. Conference of Optics- ROMOPTO '97, University of Bucharest, Faculty of Physics; Invited lectures: Proc. SPIE **3405**, 375 and 432(1998);
- 1996 Conference "Physics and Applications of Non-crystalline Semiconductors in Optoelectronics" NATO ASI Series, High Tech. (Vol. 36, Kluwer Academic Publ., Dordrecht, 1997, A.Andriesh and M.Bertolotti Eds., p.181)
- 1985 "Optica acta" Special issue dedicated to 25 years laser, Invited paper, Optica Acta, **32**, (9/10), 1235(1985)
- 1971 5th School on Holography, Akademgorodok, Novosibirsk, Jan. 1973, in "Physical Principles of Holography" ("Materiali piatoli scoli po golografii"), Leningrad, 1974, p.196

COURSES AND INVITED LECTURES HELD AT UNIVERSITIES

Universitatea Bucuresti – Fac. Fizica / Scoala Doctorala de Fizica), Stanford University (U.S.A.), Imperial College (London), Max-Planck Inst. f. Quantenoptik (Garching), University of Oxford, E.T.H.(Zürich), Univ. Erlangen, Phys.-Tech.Institute A.F.Ioffe (St. Petersburg), ICTP (Trieste), Forschungszentrum Karlsruhe, Universita "La Sapienza" di Roma, US Air Force Res. Lab Hanscom (Boston, USA), DAAD Summer School "Trends in Contemporary Optics", (Sinaia, 2005), Ecole Normale Supérieure (Cachan, France) etc.

PUBLICATIONS

- Books: 5; Book chapters: 3; Editor/Co-author of 7 Proceedings volumes published in USA;
- Papers in ISI international journals (as Physical Review, J. of the Optical Society of America, J. of Optics: A, Optics Letters, Optics Communications, Progress in Optics, Applied Physics Letters, Applied Optics, Optical Engineering, Appl. Surface Science) and proceedings (as SPIE, IEEE): 90;
- Papers in Romanian journals (as Romanian Reports in Physics, Romanian J. of Physics, Proc. Romanian Academy : A, J. Optoelectronics and Adv. Materials, all now ISI journals): 100;

- Communications in international meetings: 100, of which 15 invited lectures;
- Communications in national meetings: 130;
- Patents: 4 (1 in USA) (co-authored 16 laser instruments)

When elected Fellow of The International Society for Optical Engineering (SPIE), *SPIE News release* cited him: “Vlad is one of the world’s leading researchers in dynamic holography, photorefractive crystals and nonlinear optics” (May 1, 2007)

HONOURS, AWARDS, FELLOWSHIPS

- Prize "T.Vuia" of the Romanian Academy (1978)
- Fellow of the Optical Society of America (1978)
- Fellow of The Institute of Physics” (FInstP), London (1999)
- Senior Associate Member of the Intl. Center of Theoretical Physics (ICTP, Trieste, 2003)
- Member of “Academia Europaea” (2005)
- Fellow of The International Society for Optical Engineering (S.U.A., 2007)
- “Galileo Galilei” Prize and Medal of the Intl. Comm. of Optics (part of IUPAP and ICSU, 2005)
- National Order “Loyal Service” in grade of Knight (2008)

EDITORIAL ACTIVITIES IN INTERNATIONAL AND NATIONAL JOURNALS

- Editorial board of the journal “*Optics Letters*”, SUA (1980-90)
- Editorial board of “*Journal of Optics A: Pure and Applied Optics*”, I.O.P. Publ. London (1998-2006)
- Editorial board of “*Journal of European Optical Society*”, London (2006-present)
- Member of the Editorial board of the journal “*SPIE Review*”, SUA (2008-present)
- Member in the Scientific Council of the Publishing House of Romanian Academy
- Chief Editor of the journal “*Proceedings Romanian Academy*”, Series A: *Mathematics, Physics, Technical Sciences, Information Science and Technology* (ISI – Journal, 2009)
- Chief Editor of the journal “*Romanian Reports in Physics*” (Publ. House of the Romanian Academy) (2000-present, ISI – Journal, 2009 IF:~0.5)
- Scientific referee for more than 10 scientific journals

MEMBERSHIPS IN PROFESSIONAL SOCIETIES

- The Romanian Society of Physics – President of the Section of Optics and Quantum Electronics, 1991-2009 (Vlad obtained the recognition of the Romanian Section as a Territorial Committee of the International Commission of Optics (ICO) at its Congress of Budapest, in 1993 and as a national representative of the European Society of Optics (EOS), in 1996)
- The Optical Society of America
- The Institute of Physics (London, UK)
- The European Physical Society and European Optical Society
- The International Society for Optical Engineering (SPIE-USA) and (first) Vice-president of the Romanian Chapter of SPIE (1991-1993) (together with A. Podoleanu, he obtained the recognition of the Romanian Chapter by SPIE, at the Annual Congress at San Diego, USA, 1992)

OTHER ACTIVITIES

Leading over 65 national and international R&D contracts.