Curriculum vitae

Prof. Valentin BARNA

Year and place of birth : 1980, Bucharest (Romania).
Nationality: Romanian.

Education and Professional Expertise

* 1995 - 1999 National College "Ghe. Lazar", Bucharest (Romania)

* 1999 - 2003 Faculty of Physics, University of Bucharest.
Diploma of Graduation – Summa cum Laude 2003 from Polymers\ Liquid Crystals Department (University of Bucharest). Valedictorian of Physics Faculty (1999-2003 class) and award for best student (University of Bucharest).

* 2006 PhD Diploma in Physics (Summa cum Laude) at University of Calabria (UNICAL) – Italy. Also coordinated young PhDs in various scientific projects.
* 2006 - invited PhD researcher at Case Western Reserve University (Cleveland - USA).
* 2007 - 2008 Post-Doctoral Studies in Physics at Case Western Reserve University (Cleveland - USA). Also coordinated PhD and master students in various scientific projects.

* 2009 – 2013 - Assistant Professor at the University of Bucharest, Faculty of Physics.
* 2013 – 2019 - Associate Professor at the University of Bucharest, Faculty of Physics.
* 2019 – present - Professor at the University of Bucharest, Faculty of Physics.

----- Teaching activities consisting in Soft Matter Courses and Laboratories (Liquid Crystals, Polymers, Nanotechnologies), Optics & Photonics and Mechanics.
In addition, Dr. Valentin Barna coordinated and supervised students for graduation preparations & diploma theses, master students and also PhDs in various scientific projects. Team leader of various national/faculty projects.

Awards, Distinctions and Honors. The visibility of the scientific contributions (selection).

The visibility of the scientific contributions is reflected in the published ISI articles (over 45 ISI papers), published books/chapters, research patents, more than 100 participations & contributions (plenary, invited talks and posters) at national/international conferences and scientific meetings and several prestigious awards for scientific and research activity.

(Scientific Awards - selection -)

* Romanian Academy Award in Sciences for scientific research activity in 2005.
* Romanian National Council of Research - „IN HOC SIGNO VINCES" Award 2010 for Outstanding Reasearch Activity in the last years.
***** Romanian Ministry of Education and Research --- „Best Young Researcher" Award 2010.
* "ALARICO - Summer School on NanoScience of Soft Matter", Rende (Italy), 2005 and 2008. Invited Lectures on Ellipsometry and Applications.
* "Workshop on Optics and Photonics 2006" , Ancona, Italy, 2006.
"Experimental Investigations of Random Laser Action in Dye Doped Nematics" - Received the Award of Best Presentation IWOP & Optical Society of America (OSA) 2006.
*** Invited scientific interviews in various research news journals such as Optics & Photonics Focus, UPI Science News, Laser Focus World etc.
----- Foreign Languages: English (excellent), Italian (excellent), French (good), Romanian (native).
----- Others: Computer literacy – Windows, MS Office, Origin, Hardware etc.

Research Interests: The research interests (as well as expertise) cover many topics from Condensed Matter Physics, Material Sciences, Optics and Photonics such as: Optics and Photonics of bandgap materials (photonic crystals & chiral liquid crystals); Lasing in periodic, quasiperiodic and random media; Physical properties of confined liquid crystal materials in sculptured polymeric microcavities presenting different geometries; Random lasing and weak localization of light in nematic liquid crystals; Plasma polymerization technique and thin films; Surfaces and interactions in nematic liquid crystals - thin polymer films; New soft materials and applications in photonics and optics; NSOM and Nanoimaging investigations of birefringent ordered materials; AFM nanoscribing techniques; Electro-Hydrodynamic instabilities in polymer films; AFM, NSOM, DSC, SE Ellipsometry, VIS-IR Spectrometry; UV Nanolitography, Monte Carlo simulations for confined soft matter systems etc.

Scientific Results (review): Over 45 ISI articles published between 2004 – 2018 in prestigious international journals (NATURE Physics, Phys. Rev. Lett, Appl. Phys. Lett, Phys. Rev. E, Opt. Lett., Optics Express etc) having over 600 citations up to date (Hirsch Index = 14); 5 non-ISI articles; more than 100 contributions at prestigious national/international scientific conferences and meetings (oral presentations or posters), several invited Interviews in international scientific magazines/journals; 6 books or book chapters (coauthor) and 2 international patents (coauthor). Other pending publications/patents.

a) Selection of ISI Publications:

1. ”Fast electro-optic switching in nematic liqiud crystals”. A.L.Ionescu, A.Ionescu, E.S.Barna, V. Barna, N. Scaramuzza. Applied Physics Letters Vol 84(1) pp. 40-42., (2004).
2. “Molecular simulation of the free surface order in NLC samples“,N. Scaramuzza, C.Berlic, E.S.Barna, G.Strangi, V. Barna, A.Ionescu, Journal of Physical Chemistry B, 108(10), 3207, (2004).
3.“Role of delocalized electrons in polyaniline - nematogen cyanobiphenyls interaction“, A.L.Ionescu, A.Ionescu, E.S.Barna, V.Barna, N. Scaramuzza. Journal of Physical Chemistry B, 108(26), 8894-8899, (2004).
4. "Color Tunable Distributed Feedback Organic Micro-Cavity Laser", G. Strangi, V. Barna, et al. Physical Review Letters 94, 063903, (2005).
5. "Band-Edge and Defect Modes Lasing Due to Confinement of Helixed Liquid Crystals in Cylindrical Microcavities", Barna V. et al. Published as article in Applied Physics Letters 87, 221108 (2005). *Also as Journal Cover in Applied Physics Letters, Nov 2005 Issue.*
6. "Distributed FeedbackMicro-Laser Array: Helixed Liquid Crystals Embedded in Holographically Sculptured Polymeric Microcavities", Barna V., et al. Optics Express, Vol.14, 7, pp 2695, (2006).
7. "Random Lasing and Weak Localization of Light in Dye-Doped Nematic Liquid Crystals",Strangi G.,Ferjani S., Barna V.,et al. Optics Express, 14, 17, 7737-7744 (2006).
8. "Thermal Behaviour of Random Lasing in Dye Doped Nematic Liquid Crystals", Ferjani S., Barna V. et al. Applied Physics Letters 89, 121109 (2006).
9. "Random lasing in dye doped nematic liquid crystals: the role of confinement geometry", Strangi G., Ferjani S., Barna V., De Luca A., Versace C., Scaramuzza N., Bartolino R.; Liquid Crystals and Applications in Optics, Vol. 6587, 5870, (2007).
10. "Random Lasing in Freely Suspended Dye Doped Nematic Liquid Crystals"; Ferjani S., Barna V.,et al. Optics Letters, Vol. 33 Issue 6, pp.557-559 (2008).

11. "Statistical Analysis of Random Lasing Emission Properties in Nematic Liquid Crystals", Ferjani S., Sorriso L-V., De Luca A., Barna V.,et al. ; Physical Review E 78, 011707 (2008).
12. "Nanoscale alignment and optical nanoimaging of a birefringent liquid", Barna V., De Luca A., Rosenblatt C. Nanotechnology 19, 32, 325709 (2008).
13. "Optical nanotomography of anisotropic fluids", De Luca A., Barna V., Atherton T., Carbone G., Sousa M., Rosenblatt C.; Nature Physics, 4, 869 (2008).
14. "Thermo-Recurrent Nematic Random Laser", Ferjani S., De Luca A., Barna V., Versace C., Strangi G. Optics Express, Vol. 17, No. 3, 2042, (2009).
15. "Direct measurement of surface-induced orientational order parameter profile above the nematic - isotropic phase transition temperature", Lee J-H., Atherton T., Barna V.,et al. Physical Review Letters 102, 167801 (2009).
16. "Coherent backscattering and dynamical light localization in liquid crystals driven throughout chaotic regimes", Carbone F., De Luca A., Barna V., Ferjani S., Versace C., Strangi G. Optics Express 17, 16, 13435 (2009).
17. "The influence of drying temperature on the closed-packed structure of silanized monolayers deposited on indium tin oxide (ITO) substrates", D'Elia S., Barna V.,et al. Journal of Materials Research, 24, 9, 2784 (2009).
18. "Model for trap-assisted electron tunneling in thin insulators", V. Filip, J. Liu, C. K. Wong, H. Wong, D. Nicolaescu, V. Barna, and E. S. Barna, Journal of Vacuum Science & Technology B, 28, 2 (2010).
19. "Monte Carlo simulation of the molecular distribution and optical properties of a nematic liquid crystal system with periodic surface gratings", C. Berlic and V. Barna. Optics Express, 18, 23, 23646 (2010).
20. "Amplification of light and random laser action in partially ordered dye-doped nematics"
V. Barna, et al., Optoelectronics and Advanced Materials – Rapid Communications, 5,11,1154 (2011).
21. "High Yield Biopolymer Systems Obtained From Leather Wastes" A.G. Zainescu, V. Barna,R. Constantinescu,V. Petre, Plastic Materials, 48,4 (2011).
22. "Molecular simulation of a nematic liquid crystal cell with asymmetric recurrent boundary conditions" V. Barna and C. Berlic, Molecular Crystals and Liquid Crystals,549,140 (2011).
23. "Representative longitudinal optical phonon modes in polar semiconductor quantum dots"
Cheche, T.O., Barna, V., Stamatin, I. , Chemical Physics, 400, 207 (2012)
24. "Monte Carlo Simulation Study For A Negative Dielectric Anisotropy Nematic Liquid Crystal Presenting A Defect Nanoparticle Under Applied Electric Field Conditions"; Berlic, C, Moisescu, M, Barna, V; Digest Journal Of Nanomaterials And Biostructures, 7, 4, 1701, (2012).

25. "Fabrication And Characterization Of Thin Polyaniline Films Obtained By Glancing Angle Deposition (Glad) Technique" Barna, V et al. Digest Journal Of Nanomaterials And Biostructures, 7, 4, 1481-1490 (2012).
26. "Periodic and aperiodic liquid crystal-polymer composite structures realized via spatial light modulator direct holography" Infusino, M; De Luca, A; Barna, V; Caputo, R; Umeton, C; Optics Express, 20, 21 , 23138-23143 (2012).
27. "Theoretical approach for type-i semiconductor spherical core-shell quantum dots heterostructure with wide band gaps" T. O. Cheche, V. Barna, I. Stamatin; Journal Of Optoelectronics And Advanced Materials, 15, 7-8, 615 (2013).
28. "Analytical approach for type-II semiconductor spherical core–shell quantum dots heterostructures with wide band gaps" Tiberius O. Cheche , Valentin Barna , Yia-Chung Chang, Superlattices and Microstructures, 60, 475–486 (2013).
29. "Monte Carlo type investigations on the nucleation processes in soft matter systems" Berlic, C., Barna, V., Manolescu, B., Dena, D.; Digest Journal of Nanomaterials and Biostructures 8 (4), pp. 1845-1852, (2013).
30. "Para-phenylene derivatives obtained by plasma polymerization technique" Nastase, C., Dumitru, A., Barna, V., Nastase, F.; Digest Journal of Nanomaterials and Biostructures 8 (4), pp. 1811-1818 (2013).
31. "Investigations on the nucleation processes in frustrated polymeric systems"; Berlic, C., Barna, V., Manolescu, B., Mahler, B., Staicu, D.; Digest Journal of Nanomaterials and Biostructures 9 (3), pp. 919-928 (2014).
32. "Study of the instantaneous nucleation phenomena in soft matter systems by means of Monte Carlo simulation" Berlic, C., Barna, V., Manolescu, B., Dena, D. ; Digest Journal of Nanomaterials and Biostructures 9 (1), pp. 197-204 (2014).
33. "Investigation Of Polymer Nucleation Process In N-Dimensional Space", C. Berlic, V. Barna, B. Manolescu; Digest Journal of Nanomaterials and Biostructures 10, 4, 1365 (2015)
34. "Mirrorless dye doped ionic liquid lasers", V. Barna, L. De Cola, Optics Express 23, 9, 11936 (2015).
35. "Sporadic Polymer Crystallization In The N-Dimensional Space", C. Berlic, V. Barna, Digest Journal of Nanomaterials and Biostructures 11, 1, 159 (2016).

b) Patents

1."Transient interface charged layer effect (TICLE) on the relaxation of electro-optic switching in nematic liquid crystals to build electro-optical devices" V. Barna et al., DF03 A 0002376, 2003.

2. "Random Lasing Photo-Curable Composition for Use as Random Lasing Gain Medium", L. De Cola, D. Genovese, V. Barna, Patent 16305467.9 -1556, 2016.

c) Books/ book chapters (selection)

1. "Polymer Physics Breviary", Constantinescu L., Barna E.S., Fianu S. and Barna V.
Editura Universitatii din Pitesti, 234 pag, (2005), Romania.

2. "Physical Properties of Polymers. Aplications.", Constantinescu L., Berlic C. and Barna V. Editura Universitatii din Bucuresti, 196 pag, (2006), Romania.

3. Chapter – "Random Lasing in Liquid Crystals" in "Liquid Crystal Microlasers".
Strangi G., Barna V., De Luca A., Ferjani S., Versace C., Ed. Transworld Research Network, ISBN 978-81-7895-469-1, (2010).

4. Chapter - " Syntheses and Applications of Carbon Nanotubes and Their Composites" Chapter - "Mixtures Composed of Liquid Crystals and Nanoparticles" , V Popa-Nita, V. Barna, R. Repnik, S. Kralj, Ed. INTEC (Ed. S. Suzuki), ISBN 978-953-51-1125-2, (2012).

d) Conferences, Congresses, Scientific Meetings - over 100 participations with invited, oral presentations, or posters.