

CURRICULUM VITAE

of Irina Elkova Bineva



CONTACT INFORMATION

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Institute of Solid State Physics “Acad. G. Nadjakov”,
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Scopus Author ID: 6701706013

CURRENT POSITION:

Institute of Solid State Physics “G. Nadjakov”, Bulgarian Academy of Sciences, Bulgaria -
Associated professor in Nanophysics division

EDUCATION:

2005, Ph.D. in Condensed Matter Physics

Institute of Solid State Physics “G. Nadjakov”, Bulgarian Academy of Sciences, Sofia,
Bulgaria

Thesis: **Silicon nanoparticles in thermal SiO_x thin films**

Supervisor: Assoc. Prof. Dr. Diana Nesheva

1997, MSc in Organic and Analytical Chemistry

Sofia University “St. Kl. Ohridsky”, Faculty of Chemistry.

Thesis: “Experimental and ab initio studies on the IR spectra and structure of trans -
benzylidenecyanoacetamide and of its potassium cyanide (¹⁴N and ¹⁵N) adducts”

Supervisor: Acad. I. Juchnovski

TRAINING

30.05 – 11.06.2010

NATO Advanced Study Institute “Nanotechnological Basis of
Advanced Sensors” - Sozopol, Bulgaria.

2009-2010

One year fellowship of World Federation of Scientists, WFS
Planetary emergency AIDS and infection diseases, Fight against
tumor diseases, for AFM and MFM investigations of bioferrofluids
for medical applications, advisor Prof. I. Nedkov, Institute of

	Electronics, BAS, 2009-2010.
01-13.07.2008	NATO Advanced Study Institute, Functional Properties of Nanostructured Materials, 01-13 June 2008, Sozopol, Bulgaria.
15.02.2006-14.02.2007.	Postdoctoral fellowship as Experienced researcher in Marie Curie RTN “Advanced Handling and Assembly in Microtechnology-ASSEMIC”
2006-2008	Scientists exchange in investigation projects between republic Bulgaria and Federal Republic Germany (DAAD Project) Д-01-78: Electrical and Optical Properties of Multilayers Structures, Containing Si Nanoparticles for Application in Electronics
08.2006r.	Course on Microrobotics, FSRM, Neuchatel, Switzerland
03-14.06.2005	NATO Advanced Study Institute, Functional Properties of Nanostructured Materials, Sozopol, Bulgaria.
25.06-5.07.2002	International School of Physics “Enrico Fermi”, course on “Electron and Photon confinement in Semiconductor Nanostructures”, Varenna, Italy.
10– 16.10.2000	Autumn School on Materials Science and Electron Microscopy 2000, Berlin, Electron Microscopy of Catalysts and Nanostructured Materials

PROFESSIONAL EXPERIENCE:

Institute of Solid State Physics “G. Nadjakov”, Bulgarian Academy of Sciences, Photoelectrical and optical phenomena in wide-gap semiconductors lab, Nanophysics division from 1997 until now

- Chemist – 1997, 2003-2005
- Assist. Prof. II degree – 2005-2007
- Assist. Prof. I degree – 2007-2012
- Associated Professor – 2012 -

IMT-Bucharest , Romania:

Experienced researcher in Marie Curie RTN “Advanced Handling and Assembly in Microtechnology-ASSEMIC” – 02.2006-02.2007; participation in WP2 (Task II.4. Micromanipulation for biological and medical applications), WP4 (Task III.3. Hybrid Microsystems and alternative approaches: Development of technologies for hybrid MOEMS. Development of optical interconnection for hybrid MEMS)

SCIENTIFIC ACTIVITIES

Scientific interests:

- Condensed matter physics, Material science and Nanotechnologies, SPM (Scanning Probe Microscopy), AFM (Atomic Force Microscopy),

- Material characterization, Structure, Morphology, Vibrational, Optical and Electrical Properties of Crystalline and Amorphous Semiconductors, Photoluminescence, Multidisciplinary research
- Crystals and Amorphous Semiconductors, Thin Films, Nanomaterials (Amorphous and Nanocrystals), Superlattices and multilayered structures, amorphous and crystalline nanoparticles in various matrices, Low Dimensional systems.

Skills:

Familiarity with the following instruments: SPM (AFM, EFM, SP, CAFM, MFM, Nanoidentation and nanolithography) Optical and IR transmission measurements, Electrical and Photoelectrical measurements, Photoluminescence, Electroluminescence, SEM, and so on. Skills in preparation and characterization of SiO_x and chalcogenide thin films, multilayer structures and nanocrystals in various thin film matrices; Knowledge in structural, vibrational, optical and electrical properties; Skills in thermal vacuum evaporation, knowledge in Sputtering and CVD techniques.

Patents: Bulgarian patent № 65971/09.09.2010. D. Nesheva, N. Nedev, E. Manolov, R.Brueggeman, S. Meier, Z. Levi, **I. Bineva** „Metal-Insulator-Silicon Structures, Containing Silicon Nanoparticles and Method for Their Fabrication”.

Number of publications – 58 (from them 3 are in book chapters and 44 are in international journals with Impact factor/Impact rank).

Independent Citations: 315, h-factor 8 (Scopus)

Conferences: 59

Anonymous referee for: Nanotechnology, Journal of Physics D: Applied Physics, Surface and Coatings Technology, Materials Science and Semiconductor Processing, J. Phys. Chem.C, Journal of Alloys and Compounds, Measurement Science and Technology.

PUBLICATIONS:

2017

1. **Bineva I.**, Pejova B., Mihailov V., Dinescu A., Danila M., Karatodorov S. “Structural and morphological characterization of ternary nanocrystalline Cu-In-S thin films prepared by laser ablation“ *Journal of Physics Conference Series* 2017 **794** (1) 012019. **SJR 0.217**
2. T. Hristova-Vasileva, **I. Bineva**, A. Dinescu, M. Danila, D. Arsova, As₂Se₃ thin films deposited by frequency assisted thermal evaporation – morphology and structure, *J. Phys.: Conf. Series* 2017 **794** (1) 012015. **SJR 0.217**

2016

3. T. Hristova-Vasileva, **I. Bineva**, A. Dinescu, D. Nesheva, D. Arsova, B. Pejova “Influence of the thickness on the morphology and sensing ability of thermally-deposited

tellurium films”, *Journal of Physics: Conference Series* **700** (2016) 012037, doi:10.1088/1742-6596/700/1/012037. **SJR 0.217**

4. D.Nesheva, F. Comanescu, **I.Bineva**, M.Purica, Z. Levi, Z. Aneva, R. Muller Raman Study of Compositional Variations in $\text{Zn}_x\text{Cd}_{1-x}\text{Se}$ Films Prepared by Thermal Vacuum Evaporation. *Journal of Nanoscience and Nanotechnology*, **Vol 16**, Number 8, 2016, pp. 8513-8518(6), American Scientific Publishers, **IF:1.56**.
5. D.Nesheva, V. Dzhurkov, M. Scepanovic, **I.Bineva**, E.Manolov, S. Kaschieva, N. Nedev, S. Dmitriev, Z. Popovic High Energy Electron-Beam Irradiation Effects in Si-SiO_x Structures. *Journal of Physics: Conference Series*, 682 (2016) 012012, **SJR:0.22** doi:10.1088/1742-6596/682/1/012012.
6. B. Pejova, **I. Bineva**, Sonochemically assisted colloidal route to CdSe quantum dot assemblies: an alternative way to further fine-tune the size-dependent properties, *Journal of Materials Science: Materials in Electronics*, (2016), 1-16 **DOI** 10.1007/s10854-016-5155-4. **IF 1.798. Cited 1 time**
7. T. Hristova-Vasileva, **I. Bineva**, A. Dinescu, D. Arsova, D. Nesheva, “Cymatics” of selenium and tellurium films deposited in vacuum on vibrating substrates, *Surface and Coatings Technology*, Volume **307**, Part A, 2016, Pages 542-546, <http://dx.doi.org/10.1016/j.surfcoat.2016.09.042>. **IF 2.139**
8. D Nesheva, M Šćepanović, M Grujić-Brojčin, V Dzhurkov, S Kaschieva, **I Bineva**, S N Dmitriev and Z V Popović Photoluminescence from 20 MeV electron beam irradiated homogeneous SiO_x and composite Si-SiO_x films *Journal of Physics: Conference Series*, **Vol 764**, Number 1, 012018. **SJR:0.22**
9. Levi, Z., Nesheva, D., **Bineva, I.**, Hristova-Vassileva, T., Stambolova, I., Blaskov, V. Electrical and Photoelectrical Properties of Nanocrystalline ZnO Films Prepared by Microwave Assisted Sol-Gel Method. *Nanoscience&Nanotechnology*, 2016, **16**, 2, 16-19, BAS, NCCNT.

2015

10. D. Nesheva, N. Nedev, M. Curiel, V. Dzhurkov, A. Arias, E. Manolov, D. Mateos, B. Valdez, **I. Bineva**, and R. Herrera “Application of Metal-Oxide-Semiconductor structures containing silicon nanocrystals in radiation dosimetry” *Open Phys.* **13** (2015)63–71. DOI:10.1515/phys-2015-0006. **IF 1.085**.
11. R. Herrera, M. Curiel, A. Arias, D. Nesheva, N. Nedev, E. Manolov, V. Dzhurkov, O. Perez, B. Valdez, D. Mateos, **I. Bineva**, W. dela Cruz, O. Contreras “Structural, compositional and electrical characterization of Si-rich SiO_x layers suitable for application in light sensors” *Materials Science in Semiconductor Processing* (2015) **37**, 229-234. **IF:1.955. Cited 2 times**
12. B. Pejova and **I. Bineva** „Charge carrier transport through 3D assemblies of zincblende CdSe and ZnSe quantum dots in weak size-quantization regime“ *Journal of Materials Science: Materials in Electronics*: Volume **26**, Issue 7 (2015), Page 4944-4955. DOI:10.1007/s10854-015-3006-3, **IF 1.569 Cited 1 time**
13. A. Arias, N. Nedev, D. Nesheva, M. Curiel, E. Manolov, D. Mateos, V. Dzhurkov, B. Valdez, O. Contreras, R. Herrera, **I. Bineva**, and J. M. Siqueiros “UV Dosimeters Based on Metal-Oxide-Semiconductor Structures Containing Si Nanocrystals” *Sensor Letters* **13**(7) (2015), 561-564, DOI:http://dx.doi.org/10.1166/sl.2015.3337, **IF:0.558**
14. **I. Bineva**, T. Hristova-Vassileva, B. Pejova, D. Nesheva, Z. Levi, Z. Aneva “Long term ageing changes in structure and morphology of nanocrystalline $\text{Zn}_x\text{Cd}_{1-x}\text{Se}$ thin films” in *CAS 2015 proceedings*, pp 71-74. **SJR 0.155**.

2014

15. D. Nesheva, Z. Aneva, Z. Levi, **I. Bineva**, I. Miloushev, Effect of the composition and annealing on the electron transport in $\text{Zn}_x\text{Cd}_{1-x}\text{Se}$ nanocrystalline films, *J. All. Compd.* **586** (2014) 650–655. **IF 2.999 Cited 1 time**
16. A. Arias, N. Nedev, D. Nesheva, M. Curiel, E. Manolov, D. Mateos, V. Dzurkov, B. Valdez, O. Contreras, R. Herrera, **I. Bineva**, J. M. Siqueiros, “MOS Structures Containing Si Nanocrystals for Applications in UV Dosimeters” *Key Engineering Materials* Vol. **605** (2014) pp 380-383, doi:10.4028/www.scientific.net/KEM.605.380. **SJR 0.207**
17. D. D. Nesheva, **I. E. Bineva**, M. Danila, A. Dinescu, Z. M. Levi, Z. I. Aneva, R. Muller “Effect of the sublayer thickness and furnace annealing on the crystallographic structure and grain size of nanocrystalline $\text{Zn}_x\text{Cd}_{1-x}\text{Se}$ thin films” *Bul. Chem. Commun*, Vol. **45** / Special Issue B (pp. 11-17), 2013 - Proceedings of the Jubilee Scientific Session on “Interdisciplinary Chemistry”, October 17-18, 2013, Bankya, Bulgaria. **IF 0.32**
18. B. S. Blagoev, T. C. Nurgaliev, **I. E. Bineva**, E. D. Vasileva, V. Štrbik, E. S. Mateev “Resistive characteristics of LSMO/LCMO bi-layers and temperature switching effect of magnetoresistance” *Mod. Phys. Lett. B* **28**, 1450096 (2014) [10 pages] DOI: 10.1142/S0217984914500961, **IF 0.474**
19. B S Blagoev, I G Gostev, T K Nurgaliev, V Štrbik, **I E Bineva**, L Uspenskaya, E S Mateev, L Neshkov, E Dobročka and Š Chromik “Deposition and characterization of thin HTS and magnetic perovskite films” , 18th International Summer School on Vacuum, Electron and Ion Technologies , *Journal of Physics: Conference Series* **514** (2014) 012041 doi:10.1088/1742-6596/514/1/012041. **SJR:0.217**

2013

20. Biljana Pejova and **Irina Bineva** “Sonochemically synthesized 3d assemblies of close-packed In_2S_3 quantum dots: structure, size dependent optical and electrical properties” *Journal of Physical Chemistry C* (2013), **117** (14), pp 7303–7314 doi: 10.1021/jp310047t. **IF 4.814 Cited 11 times**
21. A. Amova, T. Hristova-Vasileva, L. Aljihmani, **I. Bineva**, V. Vassilev, Region of glass formation and main physicochemical properties of glasses from the “ $\text{As}_2\text{Se}_3\text{-Ag}_4\text{SSe-PbTe}$ system”, *J. All. Compd.* **573** (2013) pp 32-36, DOI:10.1016/j.jallcom.2013.03.267 **IF 2. 99 Cited 2 times**
22. D. Mateos, A. Arias, N. Nedev, M. Curiel, V. Dzhurkov, E. Manolov, D. Nesheva, O. Contreras, B. Valdez, **I. Bineva**, O. Raymond, J.M. Siqueiros “Metal-oxide-semiconductor structures with two and three-region gate dielectric containing silicon nanocrystals: Structural, infrared and electrical properties” (2013) *Technical Proceedings of the 2013 NSTI Nanotechnology Conference and Expo, NSTI-Nanotech 2013*, **1**, pp. 396-399, ISBN 1-4244-0109-7.
23. B. Katranchev, M. Petrov, **I. Bineva**, Z. Aneva, and D. Nesheva ”Orientation of dimeric liquid crystals through $\text{Zn}_x\text{Cd}_{1-x}\text{Se}$ nanostructured surfaces” *Nanoscience and Nanotechnology* **13** (2013) pp 98-100 (Proc. 16th Workshop on Nanosci. and Nanotechnol., Sofia, November 2012, Eds. E. Balabanova and I. Dragieva, Heron press). **Cited 1 time**
24. **I. Bineva**, A. Dinescu, D. Nesheva, M. Danila, Z. Aneva, Z. Levi, R. Muller, “Effects of the preparation conditions and furnace annealing on the structure and morphology of

Zn_{0.8}Cd_{0.2}Se thin films” in CAS 2013 proceedings, **Vol.1** , pp 127-132. **SJR 0.155 – BEST PAPER AWARD.**

2012

25. Diana Nesheva, Nikola Nedev, Mario Curiel, **Irina Bineva**, Benjamin Valdez and Emil Manolov ”Silicon Oxide Films Containing Amorphous or Crystalline Silicon Nanodots for Device Applications” in “*Quantum Dots / Book 2*”, InTech publishers, ISBN 979-953-307-857-0, 2012, Chapter 9, 186-206.
26. **I Bineva**, D Nesheva, B Pejova, M Mineva, Z Levi and Z Aneva “Annealing induced changes in ternary nanostructured Zn_xCd_{1-x}Se thin films: structure and morphology” *17 ISCMP Journal of Physics: Conference Series* **398** (2012) 012015 doi:10.1088/1742-6596/398/1/012015. **SJR 0.226**
27. N Starbov, S Balabanov, **I Bineva**, A Rachkova, E Krumov and K Starbova „Al doped ZnO thin films – microstructure, physical and sensor properties“ *Journal of Physics: Conference Series* **398** (2012) 012019 doi:10.1088/1742-6596/398/1/012019. **SJR 0.226 Cited 1 time**
28. B Katranchev, M Petrov, **I Bineva**, Z Levi and M Mineva „Smectic C liquid crystal growth through surface orientation by Zn_xCd_{1-x}Se thin films“ *Journal of Physics: Conference Series* **398** (2012) 012036 doi:10.1088/1742-6596/398/1/012036. **SJR 0.226 Cited 1 time**

2011

29. S. Meier, R.Brueggeman, D. Nesheva, **I. Bineva** „Temperature dependence of the photoluminescence from ensembles amorphous silicon nanoparticles with various average sizes” *J. Nanosci. Nanotechnol.* **11**, 959-965 (2011). **IF 1.35 Cited 3 times**

2010

30. M. Curiel, I. Petrov, N. Nedev, D. Nesheva, M. Sardela, Y. Murata, B. Valdez, E. Manolov and **I. Bineva** „Formation of Si nanocrystals in thin SiO₂ films for memory device applications” *Materials Science Forum* Vol. **644** (2010) pp 101-10. **SJR 0.251**
31. M.A. Curiel, N. Nedev, D. Nesheva, J. Soares, R. Haasch, M. Sardela, B. Valdez, B. Sankaran, E. Manolov, **I. Bineva**, I. Petrov “Microstructural characterization of thin SiO_x films obtained by physical vapor deposition” *Materials Science and Engineering B Volume 174, Issues 1-3*, 25 October 2010, Pages 132-136, Advances in Semiconducting Materials; doi:10.1016/j.mseb.2010.03.007. **IF 1.756 Cited 5 times**
32. L. Kolaklieva, D. Nesheva, R. Kakanakov, **I. Bineva**, V. Cimalla SPM Electrical Characterization of Ti/Al – Based Ohmic Contacts for Sub-Micron Devices 27th INTERNATIONAL CONFERENCE ON MICROELECTRONICS Niš, Serbia MIEL 16-19 May 2010, art. no. 5490502 p 195-198.
33. B. Pejova, B. Abay, and **I. Bineva** "Temperature Dependence of Band Gap Energy and Sub-Band Gap Absorption Tails in Strongly Quantized ZnSe Nanocrystals Deposited as Thin Films" *Journal of Physical Chemistry C* 2010, vol. **114**, n°36, pp. 15280-15291. **IF 4.520 Cited 17 times**

34. N. Nedev, D. Nesheva, M. Curiel, E. Manolov, I. Petrov, B. Valdez and **I. Bineva** "Electrical characterization of MOS structures with self-organized three-layer gate dielectric containing Si nanocrystals" 16 ISCMP *Journal of Physics:ConferenceSeries* **253** (2010) 012034 doi: [10.1088/1742-6596/253/1/012034](https://doi.org/10.1088/1742-6596/253/1/012034). **SJR 0.265**
35. D. Nesheva, Z. Aneva, M. J. Šćepanović, **I. Bineva**, Z. Levi, Z. V. Popović and B. Pejova Composition and structure of $\text{Zn}_x\text{Cd}_{1-x}\text{Se}$ single layers prepared by thermal evaporation of ZnSe and CdSe 16 ISCMP *J. Phys.: Conf. Ser.* **253** (2010) 012035 doi: [10.1088/1742-6596/253/1/012035](https://doi.org/10.1088/1742-6596/253/1/012035). **SJR 0.265 Cited 1 time**

2009

36. D. Nesheva, **I. Bineva**, Z. Levi, N. Nedev, Zh. Dimitrov, "Transport of photoexcited charge carriers via metal-insulator-silicon structures containing Si nanoparticles", Mugla Turkey, 26-28 May 2008, *J. Optoelect. Adv. Mat. – Symposia*, Vol. 1, No. 3, 277 – 280 (2009).
37. Nesheva, D., Šćepanović, M.J., Aškrabić, S., Levi, Z., **Bineva, I.**, Popović, Z.V. "Raman scattering from ZnSe nanolayers", *Acta Physica Polonica A* 116 (1) 2009, pp. 75-77. **IF 0.433 Cited 20 times**
38. M. Šćepanovic, M. Grujic-Brojcin, D. Nesheva, Z. Levi, **I. Bineva** and Z.V. Popovic "Characterization of ZnSe Nanolayers by Spectroscopic Ellipsometry", *Acta Physica Polonica A* Vol. 116 No.4, 708-711 (2009). **IF 0.433; Cited 3 times**

2008

39. P. Horvath, S. B. Sadale, M. Sucheai, S. Christoulakis, R. Voicu, C. Tibeica, **I. Bineva**, R. Muller, T. Kitsopoulos, and G. Kiriakidis "ZnO Thin Films for Cantilever Coatings: Structural and Mechanical Properties, Observations of Photoplastic Effect" *Sensor Letters* **6**, 1–6, (2008) **IF 1.160 Cited 2 times**

2007

40. **I. Bineva**, R. Voicu, A. Dinescu, R. Gavrilă, R. Muller, D. Esinenco, B. Bucur, M. Diaconu and L. G. Radu "SiO₂ microcantilevers designed for biosensing: experiments and simulations" *Romanian Journal of Information Science and Technology (ROMJIST)*, **10**, Number 1, 13-23 (2007). **IF 0.8**
41. **I. Bineva**, D. Nesheva, Z. Aneva and Z. Levi „Room temperature photoluminescence from amorphous silicon nanoparticles in SiO_x thin films" *J. Lumin.*, **126**, 497–502 (2007). **IF 1.611 Cited 17 times**
42. **I. Bineva**, D. Nesheva, M. Šćepanović, M. Grujić-Brojčin, Z.V. Popović and Z. Levi „Dependence of photoluminescence from a-Si nanoparticles on the annealing time and exciting wavelength" *J. Lumin.*, **126**, 7-13 (2007). **IF 1.611 Cited 2 times**
43. M. J. Šćepanović, M. Grujić-brojčin, **I. Bineva**, D. Nesheva, Z. Aneva, Z. Levi, Z. V. Popović, "Raman study of ZnSe/SiO_x multilayers" *Journal of optoelectronics and advanced materials*, **9**, 178 – 181(2007). **IF 0.827 Cited 3 times**
44. D. Nesheva, Z. Aneva, Z. Levi, N. Vuchkov, K. Temelkov, **I. Bineva**, "Optical properties of ZnSe/SiO_x multilayers" *Nanoscience and Nanotechnology*, **7**, 83 (2007). (Proc. 8th Workshop on Nanosci. and Nanotechnol., Sofia, November 2006, Eds. I. Dragieva and B. Zidarova, Heron press).

45. D. Nesheva, N. Nedev, E. Manolov, **I. Bineva**, H. Hofmeister “Memory effect in MIS structures with amorphous silicon nanoparticles embedded in ultra thin SiO_x matrix”, *Journal of Physics and Chemistry of Solids*, **68**, 725-728 (2007). **IF 0.899 Cited 12 times**

2006

46. D. Esinenco, E. Budianu, **I. Bineva**, D. Andrijasevic, E. Manea, W. Brenner and R. Müller „Integrated optical proximity microsensor” *J. Lumin*, **121**, 394-398 (2006). **IF 1.441 Cited 2 times**
47. **I. Bineva**, R. Voicu, D. Esinenco, A. Dinescu, R. Muller, B. Bucur, M. Diaconu and L.G. Radu “Stress and displacement in cantilever based transducers for biosensing application” CAS 2006 International Semiconductor Conference, Sinaia, Romania, september 26-29, 2006, CAS 2006 proceedings, **Vol.1**, pp 223, ISBN 1-4244-0109-7. **SJR 0.135**

2005

48. D. Nesheva, **I. Bineva**, Z. Aneva, H. Hofmeister, Hopping transport of dark and photogenerated carriers in Si rich SiO₂ thin films, in "*Progress in Materials Science Research*", Edited by F. Columbus, Nova Science Publishers, Inc.,28, (2005).
49. D. Nesheva, Z. D. Dohčević-Mitrović, **I. Bineva**, Z. V. Popović, G. Beshkov and Z. Levi, “Time and temperature induced changes in infrared absorbance of thermal SiO_x thin films”, *Nanoscience and Nanotechnology*, **5**, (2005). **Cited once**

2004

50. **I. Bineva**, D. Nesheva, Z. Aneva, H. Hofmeister, “Carrier transport mechanism in SiO₂ thin films containing Si nanocrystals”, *Nanoscience and Nanotechnology*, **4**, 62-65 (2004).
51. **Irina Bineva** “Silicon nanoparticles in thermal SiO_x thin films” PhD thesis, 2004, **cited 5 times**

2003

52. D. Nesheva, **I. Bineva**, Z. Levi, Z. Aneva, Ts. Merdzhanova and J.C. Pivin, “Composition, structure and annealing-induced phase separation in SiO_x films produced by thermal evaporation of SiO in vacuum”, *Vacuum*, **68**, 1-9 (2003). **IF 0.612 Cited 31 times**
53. **I. Bineva**, D.Nesheva, Z.Aneva, Z.Levi, C.Raptis, H.Hofmeister, S.Stavrev, “Effects of annealing atmosphere and substrate on the photoluminescence and Raman scattering from Si nanocrystals in SiO₂ matrix”, *J. Material Sci.:Materials for Electronics*, **14**, 799-780, (2003). **IF 0.637 Cited 6 times**
54. **I. Bineva**, D. Nesheva, M. Sendova-Vassileva, Z. Aneva and Z. Levi, “Annealing behaviour of photoluminescence from a-SiO_x thin films”, *Nanoscience and Nanotechnology*, **3**, 91 (2003).

2002

55. **I. Bineva**, D. Nesheva, Z. Levi, Z. Aneva and H. Hofmeister, "Silicon nanoparticle growth in thermal SiO_x thin films" Proc. 3rd Workshop on Nanosci. and Nanotechnol., Sofia, November 2001, Eds. E. Balabanova and I. Dragieva, Heron press, 2002, pp.26-28. **Cited once**
56. D. Nesheva, Z. Levi, **I. Bineva** and H. Hofmeister, "Nanocrystalline layers of CdSe produced by means of a multilayer approach", in *Nanostructured Materials: Selected Synthesis Methods, Properties and Applications*, Edited P. Knauth and J. Schoonman, Kluwer Academic Publishers, Boston (2002), pages 115 – 125.
57. D. Nesheva, C. Raptis, A. Perakis, **I. Bineva**, Z. Aneva, Z. Levi, S. Alexandrova, H. Hofmeister, "Raman scattering and photoluminescence from Si nanoparticles in annealed SiO_x thin films", *J.Appl.Phys*, **92**, 4678-4683 (2002). **IF 2.128 Cited 156 times**

2000

58. D. Nesheva, C. Raptis, Z. Levi, **I. Bineva** and Z. Aneva, "Alloying at the interface of ZnSe/CdSe multilayers and ZnSe-CdSe composite films: A Raman study", *Asian Journal of Physics*, **9**, 289 (2000). **Cited 2 times**

1998

59. E. Velcheva, **I. Bineva** and I. Juchnovski "Experimental and ab initio studies on the IR spectra and structure of trans -benzylidenecyanoacetamide and of its potassium cyanide (¹⁴N and ¹⁵N) adducts" *Compt. Rend. Acad. Bulg. Sci.*, **51**, No 5-6, (1998). **Cited 6 times**

PROJECTS

Cordinator of :

1. Investigation of New Chalcogenide Materials with Scanning Probe Microscopy, DMU 03-91/12.12.2011, Young Scientists National Contest, BNSF, 2011
Status of the project: running, with first-stage report approved, funding pending
2. Nanostructured and amorphous semiconductor films for sensors application, Projects funded under the Academy's bilateral agreements and in the framework of institute-to-institute cooperation – with National Institute for Research and Development in Microtechnologies – IMT Bucharest - 2013-2015, finished.
3. Investigation of Surface Morphology of Nanostructured Thin Films with the Help of Scanning Probe Microscopy, Joint funding by the Bulgarian and Macedonian Academies of Sciences, 2014-2017, finished.
4. Frequency-Assisted Thermal Evaporation in Vacuum – a Perspective Method for Altering the Topography of Thin Films
Project coordinator: Assist. Prof. PhD Temenuga Hristova-Vasileva, supervisor: Assoc. Prof. PhD Irina Bineva, Support for BAS Young Scientists Programme, 2016, finished
5. Investigation of the Morphology and Structure of Nanostructured and Amorphous Semiconductor Films for Microelectronics and Sensors Application Projects funded under the Academy's bilateral agreements and in the framework of institute-to-institute cooperation – with National Institute for Research and Development in Microtechnologies – IMT Bucharest - 2016-2018.

6. Raman scattering and photoluminescence study of laser modified nanocrystalline ZnO thin films suitable for sensor applications, bilateral cooperation with Serbian Academy of Sciences, 2017-2019.

Participant in:

1. Bilateral cooperation between Bulgarian and Hungarian Academies of Sciences, project titled Structural and optical properties of new semiconductor materials and structures for advanced opto and nanoelectronics applications, 2016-2018, running.
2. Projects funded under the Academy's bilateral agreements and in the framework of institute-to-institute cooperation - with Institute of Physics, Belgrad, Serbia – Study of interaction of high-energy electrons with SiO_x and c(a)-Si-SiO_x thin films, 2014-2016, finished
3. Projects funded under the Academy's bilateral agreements and in the framework of institute-to-institute cooperation - with Institute of Physics, Belgrad, Serbia – Optical and Photoelectrical characterization of thin homogeneous and nanostructured films based on ZnSe, 2010-2012, finished.
4. World Federation of Scientists, WFS Planetary emergency AIDS and infection diseases, Fight against tumor diseases, -for AFM and MFM investigations of bioferrofluids for medical applications 2009-2010, finished.
5. NSF, No BM-1- Three –dimensional assemblies of semiconductor quantum dots : structure, optical, electrical and photoelectrical properties, joint project funded by NSF of Macedonia and Bulgaria, 2008-2010, finished.
6. National Innovation Fund at the Ministry of Economy and Energy, 02-54/2007 Nanostructured coatings – new biomaterials for bone implants obtained by a method of laser-liquid-solid interaction (nanobiocomposites), 2007-2010, finished.
7. Projects funded under the Academy's bilateral agreements and in the framework of institute-to-institute cooperation - with Institute of Physics, Belgrad, Serbia Nanostructures semiconductor thin films suitable for application as gas sensors, 2007-2009, finished.
8. Program for scientists exchange in investigation projects between republic Bulgaria and Federal Republic Germany (DAAD Project) Д-01-78: Electrical and Optical Properties of Multilayers Structures, Containing Si Nanoparticles for Application in Electronics 2006-2008.
9. European FP6 Project: Marie Curie Research Training Network “Advanced Handling and Assembly in Microtechnology-ASSEMIC” - Contract No: MRTN-CT-2003 504826 - 2006-2007 (www.assemic.net), finished.
10. National Science Fund Multilayer NNP-4-1 Structures and nanocomposite materials for applications in electronics. Modul 1: Multilayer structures containing silicon nanoparticles, suitable for fabrication of electronic memories and single electron devices, 2006-2010.
11. NSF F 1306 – Defect states in photoconductor with different dimensionality (01.2004-06.2007), finished.
12. Projects funded under the Academy's bilateral agreements and in the framework of institute-to-institute cooperation - with Institute of Physics, Belgrad, Serbia – “Raman scattering and photoluminescence of semiconductor quantum dots”, 2004-2006, finished.
13. The Royal Society: Joint Project UK – Bulgaria – Electron properties of II-VI nanocrystalline semiconductors – 2001-2003, finished.

TEACHING COURSES:

- “Introduction in solid state physics” – summer practice for students in 07.2016.
- “AFM-Elementary introduction” – course for PhD students in May-June 2014.
- “Fundamentals of AFM” – course for additional operators of the SPM -2010.

- Teaching and supervising 5 operators in the period 2008-2012.