Dr. sc. Mile Ivanda
Znanstveni savjetnik u trajnom zvanju
Institut Ruđer Bošković
Zagreb, 10. svibnja 2016.

Životopis

Mile Ivanda rođen je u 24. kolovoza 1961. godine u Prisoju. Matematičko informatičku gimnaziju (MIOC) završio je u Zagrebu 1980. godine. Nakon odsluženja vojnog roka upisao je Prirodoslovno matematički fakultet u Zagrebu – smjer inženjerske fizike 1981. godine. Diplomirao je1986. magistrirao 1990. i doktorirao 1992. godine u polju fizike na Prirodoslovno matematičkom fakultetu. Ženi se 1987. godine s Tamarom Kisovar, rođenom 1964. godine u Zagrebu, koja trenutno kao docentica radi na Sveučilištu u Zadru. Roditelji su jednog djeteta.

Od prosinca 1986. godine zaposlen je na Institutu Ruđer Bošković (IRB). Krajem 1994. godine dobitnik je ugledne tromjesečne poslijedoktorske stipendije Europske Unije koju koristi na Sveučilištu u Würzburgu. Prestižnu nagradnu stipendiju Alexander von Humbolt dobiva 1995. godine te sljedeće dvije godine nastavlja svoj istraživački rad na Sveučilištu u Würzburgu u Saveznoj Republici Njemačkoj. Od 2000. do 2001. godine kontinuirano boravi i znanstveno istražuje na Sveučilištu u Trentu, Italija. Godine 2005. dobitnik je NATO nagradne stipendije te boravi 3 mjeseca na Institutu za primjenjenu fiziku Nello Carrara u Firenci, Italija. U lipnju 2006. godine izabran je na radno mjesto znanstvenog savjetnika na Institutu Ruđer Bošković, a danas je znanstveni savjetnik u trajnom zvanju na istom institutu.

Mile Ivanda aktivni je član Hrvatskog fizikalnog društva, Hrvatskog vakumskog društva, Hrvatskog astronomskog društva, Kluba hrvatskih humboldtovaca i stručne udruge MIPRO. Obnašao je dužnosti blagajnika Hrvatskog fizikalnog društva i tajnika Kluba hrvatskih humboldtovaca. Bio je zamjenik predsjednika Znanstvenog vijeća fizike IRB-a od 2006-2016. Voditelj je i suradnik na 20 znanstvenih projekata. Vodio je tehnologijski projekt *Usavršavanje i razvoj LPCVD procesa* u okviru kojeg je razvio CVD metodu za depoziciju tankih poluvodičkih i oksidnih tankih filmova. Voditelj je Laboratorija za molekulsku fiziku i sinteze novih materijala IRB-a od 2011. godine u okviru kojeg je okupio petnaest većinom mladih znanstvenika. Voditelj je 11 diplomskih odnosno magistarskih radova i 5 doktorskih disertacija. Svi mladi znanstvenici kojima je osigurao kvalitetna doktorska i poslijedoktorska istraživanja u inozemstvu vratili su se u matični laboratorij, kojeg su prepoznali kao kvalitetnije ljudsko i znanstveno radno okruženje od onog kojeg su imali u inozemstvu, u kojemu s novim međunarodno stečenim znanjima i iskustvima nastavljaju istraživanja na problematikama vezanim s razvojem visokih tehnologija.

Mile Ivanda sudjeluje u radu više od 20 međunarodnih programskih odbora znanstvenih konferencija. Pozvani je predavač na tridesetak međunarodnih konferencija i institucija. Voditelj je i organizator međunarodnih konferencija i škola: *2nd Adriatic School of*

Nanoscience, Dubrovnik 2012.; *Training School on Raman Spectroscopy* u okviru COST akcije MP1302 Nanospectroscopy, Zagreb 2015; *2nd MC meeting & 1st Annual conference of the COST action MP1401*, Zadar, 2016. Član je dvaju uredničkih odbora znanstvenih časopisa te sudjeluje kao recenzent u većem broju inozemnih časopisa. Prema bazi podataka Google Scholar, objavio je 250 znanstvenih radova čija citiranost je 3500 puta, a Hirchev indeks im je h=29, a prema bazi Web of Science objavio je 164 rada čija citiranost je 2600 puta, a h=25.

Godine 2012., u okviru restrukturiranja Instituta Ruđer Bošković, pokrenuo je proces osnivanja *Instituta za nove funkcionalne materijale i nanotehnologiju*. Ovaj prijedlog podržalo je svojim potpisom 90 djelatnika IRB-a. Na osnovu ovog prijedloga, prije 5 godina pokrenuo je u suradnji sa Sveučilištem u Zagrebu i Institutom za Fiziku osnivanje *Hrvatskog centra za napredne materijale i nanotehnologiju* (C2AMN). Na mjesto *Glavnog operativnog koordinatora* ovog projekta imenovali su ga tadašnji ravnatelji Instituta Ruđer Bošković i Instituta za fiziku te rektor Zagrebačkog sveučilišta. Ovaj projekt u vrijednosti od 42 milijuna eura, sa vrlo izraženom samoodrživom komponentom, financirao bi se u 85 postotnom iznosu iz sredstava strukturnih fondova Europske Unije. Na osnovu izrađene predstudije izvodljivosti, međunarodni recenzenti ocjenili su ovaj strukturni projekt najboljim u Republici Hrvatskoj. Godine 2013. pokreće projekt *Centra izvrsnosti za nove funkcionalne materijale* koji od strane međunarodnih recenzenata dobiva najbolje ocjene u Republici Hrvatskoj. Ovaj Centar izvrsnosti se udružuje sa naredna tri srodna centra iz područja znanosti o materijalima u *Znanstveni centar izvrsnosti za napredne materijale i senzore,* CEMS – jedinstven u Republici Hrvatskoj po kvaliteti istraživača i koncentraciji znanstvene opreme. Godine 2015. dobitnik je i vrlo kompetitivnog projekta Hrvatske zaklade za znanost *Hibridne silicijeve nanostrukture za senzore*.

U prethodnom razdoblju od osam godina Mile Ivanda, želeći ostvariti utjecaj na znanstvenu kulturu i osviještenost što većeg broja ljudi u našoj domovini, održao je veći broj popularnih predavanja te sudjelovao na mnogim tribinama vezanih za razvoj visokih tehnologija, odnosno komercijalizaciji znanja i formiranju visokotehnološke industrije u Republici Hrvatskoj.

Curriculum Vitae

PERSONAL INFORMATION	
Name and surname	**Mile Ivanda**
Academic title	Dr. / Senior Scientist
Year and institution of PhD obtained	1992, University of Zagreb
Address	BIJENIČKA C. 54
Phone	+3851-4560-928
Fax	+3851-4680-112
E-mail	ivanda@irb.hr
Personal web page	http://www.irb.hr/eng/People/Mile-Ivanda
Citizenship	Croatian
Date and place of birth	24th August 1961

WORK EXPERIENCE[1] (CHRONOLOGICALLY*)	
Date (from – until)	2005 -
Institution	*Ruđer Bošković Institute*
Position	*Senior Scientist*
Work field	*Nanoscience*
Date (from – until)	1998 - 2005
Institution	*Ruđer Bošković Institute*
Position	*Senior Research Associate*
Work field	*Materials Science*
Date (from – until)	1995 - 1998
Institution	*Ruđer Bošković Institute*
Position	*Research Associate*
Work field	*Materials Science*
Date (from – until)	1986 - 1990
Institution	*Ruđer Bošković Institute*
Position	*Research Assistant*
Work field	*Materials Science*

EDUCATION[2] (CHRONOLOGICALLY)	
Date	*1992*
Place	*Zagreb*
Institution	University of Zagreb
Title of qualification awarded	PhD

[1],[2],[3] Please add rows to enter all required information

* all information in the document should be entered chronologically – from the most recent to the oldest

Date	*1990*
Place	*Zagreb*
Institution	University of Zagreb
Title of qualification awarded	*MSc*
Date	*1986*
Place	*Zagreb*
Institution	University of Zagreb
Title of qualification awarded	*BSc*

TRAINING (CHRONOLOGICALLY)

Year	*2005*
Place	*Florence*
Institution	Institute for Applied Physics "N. Carrara"
Subject and skills covered	*Structure and optical properties of nanocrystaline silicon and cadmium sulfide-selenide for optoelectronics*
Year	*2003*
Place	*Würzburg*
Institution	University of Würzburg, Institute for Physical Chemistry
Subject and skills covered	Structure and optical properties of II-VI Semiconductors
Year	*2002*
Place	*Würzburg*
Institution	University of Würzburg, Institute for Physical Chemistry
Subject and skills covered	Structure and optical properties of II-VI Semiconductors
Year	*2001*
Place	*Würzburg*
Institution	University of Würzburg, Institute for Physical Chemistry
Subject and skills covered	Structure and optical properties of II-VI Semiconductors
Year	*1999*
Place	*Trieste*
Institution	International Centre for Theoretical Physics
Subject and skills covered	*Spectroscopy and Applications*

LANGUAGES

MOTHER TONGUE: Croatian

OTHER LANGUAGES[3]

Language	English
Speaking	excellent
Writing	excellent
Reading	excellent
Language	German
Speaking	very good
Writing	very good
Reading	excellent

2015 -2019 "**Hybrid Silicon Nanostructures for Sensing**", Principal investigator, Funding source: Croatian Science Foundation, project no.: IP-2014-09-7046.

2014 - **Contract for exemination of liquid mixtures**, Principal investigator, Funding source: CEI Microelectronics

2014 -2019 "**New functional materials**", Center of excellence for new materials and sensors, Principal investigator, Funding source: Ministry of Science and Technology of Croatia and the Structural Funds of European Union.

2014 - **Contract for research on development of nanostructured gas sensors**, Principal investigator, Funding source: Končar Institute for Electrotechnique

2010 -2013 "**Physics and application of nanostructures and bulk materials**", Principal investigator, Funding source: Ministry of Science and Technology of Croatia

2012 -2014 "**New nanostructural materials for thermoelectrics**", Principal investigator, Croatian-Slovenian bilateral project financed by Ministry of Science and Technology of Croatia.

2010 -2013 "**Novel silicon based materials for optoelectronics**"; Collaborator; Funding source: FP7 "People" - "Campaign Marie Curie" – COFUND, by Autonome Province Trento (PAT project).

2007 -2010 "**Physics and application of nanostructures and bulk materials**", Collaborator, Funding source: Ministry of Science and Technology of Croatia.

2002 -2006 "**Physics and application of nanostructures**", Collaborator, Funding source: Ministry of Science and Technology of Croatia.

2005 "**Structure and optical properties of nanocrystaline silicon and cadmium sulfide – selenide for optoelectronics**"; Principal investigator, Funding source: NATO.

2003-2005 "**Research on disordered materials; nano-optical layers**", Principal investigator; Croatian-Slovenian bilateral project financed by the Ministry of Science and Technology of Croatia.

2002 -2004 "**Implementation and development of the LPCVD process**", Principal investigator, Funding source: Ministry of Science and Technology of Croatia in the program of the technological development of Croatia.

2000 -2001 "**Study by Raman and optical techniques of nanostructures synthesized by ion bombardment**", Collaborator, Instituto Nazionale per la Fisica della Materia - MURST within the program COFIN-98.

1996 -2002 "**Scattering of light, interaction and dynamics of matter**", Collaborator, Funding source: Ministry of Science and Technology of Croatia.

1995 -1996 "**Structure and metastable states of a-Si:H and a-SiC:H**", Principal investigator, Funding source: Alexander von Humbolt Foundation

1991-1996 "**Vibrations phenomena and interactions in condensed matter**", Collaborator, Funding source: Ministry of Science and Technology of Croatia.

1995 "**Selektive Reaktionen Metall - Aktivierter Moleküle**", Collaborator, Funding source: Deutsche Forschung Gemeinschaft

1994 "**Structural properties and metastable states of a-Si: and a-Si_xC_{1-x}:H**", Principal investigator, Funding source: European Community.

2014- ***Physics and Chemistry of Nanostructured Surfaces and Materials****, University of Zagreb's scientific postgraduate study at Faculty of Chemical engineering and technology*

2013 - ***Introduction to Nanomedicine****, Inter-university postgraduate study "Molecular Biosciences», Josipa Jurja Strossmayera University in Osijek, Ruđer Bošković Institute in Zagreb and University of Dubrovnik.*

2007-2013 ***Experimental methods of physics in natural science****, Inter-university postgraduate study "Molecular Biosciences», Josipa Jurja Strossmayera University in Osijek, Ruđer Bošković Institute in Zagreb and University of Dubrovnik.*

2006-2013 ***Basics and applications of nanostructures****, University of Zagreb's scientific postgraduate study at Faculty of Chemical engineering and technology.*

2005 ***Experimental methods of modern physics****, Graduate study of physics at the Faculty of Natural Sciences and Mathematics, University of Zagreb.*

1987-1988 ***Physical Practicum III****, Graduate study of physics at the Faculty of Natural Sciences and Mathematics, University of Zagreb.*

Mentorship
of defended doctoral and master dissertations
and training of young researchers and scientists (chronologically)

Mile Ivanda je voditelj Laboratorija za molekulsku fiziku i sinteze novih materijala na Institutu Ruđer Bošković od 2011. godine u okviru kojeg je okupio petnaest znanstvenika. Voditelj je 11 diplomanada i 7 doktoranada koji su doktorirali u predviđenom roku trajanja doktorata, a izrada 4 doktorske disertacije je u tijeku.

1. Lara Mikac, **SURFACE-ENHANCED RAMAN SCATTERING: FROM THE COLLOID TO THE STABLE SUBSTRATE,** Doctoral thesis, University of Zagreb, Faculty for Natural Sciences and Mathematics, 12.02.2016. 175 p.
2. Sanja Žonja, **ANALYSIS OF STRUCTURE, ELECTRONIC AND TRANSPORT PROPERTIES OF HEAVILY DOPED POLYCRYSTALLINE SILICON THIN FILMS,** Doctoral thesis, University of Zagreb, Faculty of Engineering and Computing, June 2013., 132 p.
3. Romana Baltić, **STRUCTURAL AND OPTICAL PROPERTIES OF MICROSTRUCTURAL SILICON COATED WITH SILVER NANOPARTICLES**, Master thesis, University of Zagreb, Faculty for Natural Sciences and Mathematics, 14.02.2013., 80 p.
4. Maja Balarin, ***ELECTROCHEMICAL ETCHING OF SILICON ON INSULATOR,*** Doctoral thesis, University of Zagreb, Faculty for Natural Sciences and Mathematics, 12.07.2011. 145 p.
5. Diana Car, ***SPHERICAL ACOUSTIC VIBRATIONAS OF ZrO_2 NANOPARTICLES DOPED WITH Ti^{4+},*** Master thesis, University of Zagreb, Faculty of natural sciences and mathematics, 20.06.2011. 103 p.
6. Vedran Đerek, ***PREPARATION AND CHARACTERIZATION OF POROUS SILICON OBTAINED BY CHEMICAL METHODS***, Master thesis, University of Zagreb, Faculty of natural sciences and mathematics, 11.03. 2011. 120 p.
7. Davor Ristić, ***DEPOSITION AND CHARACTERIZATION OF NANOCRYSTALINE SILICON***, Doctoral thesis, University of Zagreb, Faculty of natural sciences and mathematics, 12.04.2010, 99 p.
8. Marijan Marciuš, ***DEPOSITION AND CHARACTERIZATION OF OXYGEN ENRICHED THIN SILICON FILMS***, Diploma work, University of Zagreb, Faculty of natural sciences and mathematics, 06.07.2010, 112 p.
9. Zdenko Tijanić, ***DEPOSITION AND CHARACTERIZATION OF NONSTOHIOMETRIC AMORPHUS SILICON NITRIDE THIN FILMS***, Diploma work, University of Zagreb, Faculty of natural sciences and mathematics, 15.12.2010, 84 p.
10. Viktor Vilman, ***DEPOSITION OF THIN SEMICONDUCTOR LAYERS***, Diploma work, University of Zagreb, Faculty of natural sciences and mathematics, 20.12.2007, 92 p.
11. Hrvoje Gebavi, ***DEPOSITION AND CHARACTERIZATION OF THIN SILICON FILMS***, Diploma work, University of Zagreb, Faculty of natural sciences and mathematics, 28.06.2006, 122 p.
12. Davor Ristić, ***RAMAN SPECTROSCOPY OF SILICON NANOPARTICLES***, Diploma work, University of Zagreb, Faculty of natural sciences and mathematics, 19.06.2006, 82 p.
13. Sanja Žonja, ***CHARACTERIZATION OF POYSILICON LAYERS OBTAINED BY LPCVD METHOD***, Diploma work, University of Zagreb, Faculty of Engineering and Computing, 21.09.2006. 102 p.
14. Ozren Gamulin, ***STRUCTURE AND OPTICAL PROPERTIES OF THIN HALCOGENIDE SEMICONDUCTORS,*** Doctoral thesis, University of Zagreb, Faculty of natural sciences and mathematics, 2004, 144 p.

15. Ozren Gamulin, Master science thesis, University of Zagreb, Faculty of natural sciences and mathematics, 1996, 96 p.
16. Ozren Gamulin, Diploma work, University of Zagreb, Faculty of natural sciences and mathematics, 1989, 92 p.

PEER REVIEW OR EVALUATION

Expert in field of physics, materials science, nanotechnology:

1	European Union, 2018, reviewer of 9 research projects.
2	University of Rijeka, Croatia, 2015, reviewer of 12 research projects.
3	National Science Center, Poland, 2015, reviewer of the grant proposal "Non-linear effects in hybrid silicon-organic materials with different molecular and supramolecular structure."
4	Serbian Ministry of Science, 2011, reviewer of the project "CVD Diamond films produced from hydrocarbons by use of the flat flame method".
5	University of Zagreb, Faculty of Chemical Engineering and Technology, 2015, reviewer of the book "Introduction to Nanotechnology".
6	Astronomical Observatory, Zagreb, 2014, reviewer of the book "Oton Kučera".
7	Elsevier, reviewer of the New Edition book proposal "Nanotechnologies for Microelectronics and Optoelectronics".

VISITS TO FOREIGN RESEARCH AND EDUCATION INSTITUTIONS

(CHRONOLOGICALLY; ONLY VISITS LONGER THAN 1 MONTHS)

1993	**Three months post doctoral fellow of the European Community** at the Institute for Physical Chemistry, University of Würzburg (Prof. Dr. W. Kiefer) on the project Structural properties and metastable states of a-Si: and a-SixC1-x:H.
1994	**One and half year ALEXANDER VON HUMBOLT post-doctoral fellow** at the Institute for Physical Chemistry, University of Würzburg (Prof. Dr. W. Kiefer) on the project "Structure and Metastable States of a-Si:H and a-SiC:H".
1995	**Three months visiting scientist** at the Institute for Physical Chemistry, University of Würzburg (Prof. Dr. W. Kiefer) on the project "Selektive Reaktionen Metall - Aktivierter Moleküle"
2000	**One year visiting scientist** at the Department of Physics, University of Trento (Prof. G. Mariotto) on the project "Study by Raman and optical techniques of nanostructures synthesized by ion bombardment" .
2001	**Two months visiting scientist** at the Institute for Physical Chemistry, University of Würzburg (Prof. Dr. W. Kiefer) on the project "II-VI Semiconductors".
2002	**Two months visiting scientist** at the Institute for Physical Chemistry, University of Würzburg (Prof. Dr. W. Kiefer) on the project "II-VI Semiconductors".

2003	**Two months visiting scientist** at the Institute for Physical Chemistry, University of Würzburg (Prof. Dr. W. Kiefer) on the project "II-VI Semiconductors".
2004	**One month visiting scientist** at CNR-IFN, Trento (Dr. M. Ferrari) on the project "Er doped SiO2-TiO2 planar waveguide".
2005	**Two months visiting scientist** at the Institute for Applied Physics "N. Carrara", Firenze (Dr. G. Righini) on the project "Structure and optical properties of nanocrystaline silicon and cadmium sulfide-selenide for optoelectronics".

AWARDS AND RECOGNITIONS
(CHRONOLOGICALLY)

1992 University of Würzburg, European Community Postdoc. Fellowship Award, 3 month
1993 – 1995 University of Würzburg, Alexander von Humboldt Fellowship Award, 18 month
2000 – 2001 University of Trento, Department of Physics, Guest researcher, 12 month
2005 Institute "Nello Carrera", NATO Research Fellowship Award, 2 month
2007 Award for the best scientific paper at MIPRO Conference
2013 Award for the best scientific paper at MIPRO Conference

MEMBERSHIP IN SCIENCE ORGANIZATIONS AND BODIES
(CHRONOLOGICALLY; HOME AND INTERNATIONAL ORGANIZATIONS AND BODIES)

1996- Member of the European Physical Society
1996- Member of the Croatian Physical Society
1990- Member of the Croatian Astronomical Society

ORGANIZATIONAL SKILLS AND COMPETENCES, COMMISSIONS, COMMITTEES, BOARDS AND WORK GROUPS
(CHRONOLOGICALLY; ORGANIZATION OF HOME AND INTERNATIONAL SCIENCE EVENTS)

1990 -2010	**Member of the State Commission** for the Primary and Secundary School Competition in Astronomy
1997 - 2001	**Treasurer** of the Croatian Physical Society
2001 -2009	**Member of the State Commission** for the Standardization TC 76 "Safety of optical radiation and laser equipment" of the State Department for Standardization and Measurements
2005 -2013	Every year - MIPRO Conference / **Member of Steering Committe**e /international congress / 800 participants / Opatija, Croatia,
2006 -2016	**Deputy Chairman** of the Scientific Council of Physics of RBI.
2010	**Associate Editor** of ISRN Spectroscopy
2010	**Member of the Jury Board**, International Fair of Innovations, New Products and Technologies, ARCA 2010, Zagreb

2010	Nanotechnologies – New challenges in the Republic of Croatia / **Head and organizer of the Round Table** at the conference 33rd MIPRO / 80 participants / Opatija, Croatia
2010	SPIE - Silicon Photonics and Photonic Integrated Circuits, **Member of Steering Committee** /International congress / 900 participants / Strasbourg, France
2011	**Guest editor** of Croatica Chemica Acta, Vol.85 No.1, editing of Proceedings of the 34th MIPRO, May 23-27, 2011, Opatija, Croatia.
2011	**President of the Scientific Board** of the Croatian Physical Society.
2011	Croatian Physical Society Meeting / **President of the Scientific Committee** / 200 participants / Primošten, Croatia.
2012	**Editor of Proceedings** of the 2nd Adriatic School on nanoscience (ASON-2), Ruđer Bošković Institute,
2012	2012 2nd Adriatic School on Nanoscience (ASON-2) / **Chairmen and the main organizer of the conference** / international summer school& conference / 90 participants / Dubrovnik, Croatia
2013	Spring World Congress on Engineering and Technology (SCET 2014) /**Member of International Advisory Board** / international congress / 900 participants / Shanghai, China.
2014	13th International Ceramics Congress - CIMTEC 2014 / **Member of International Advisory Board** / international congress / 700 participants / Montecatini Terme, Italy.
2014 - 2016	**Secretary** of Croatian Humboldt Club
2015	**Chair** of Training School on Raman Spectroscopy under the COST action MP1302 Nanospectroscopy, Zagreb, Croatia, September 23-25, 2015.
2016	**Chair** of the 2nd MC meeting & 1st Annual conference of the COST action MP1401, Zadar, Croatia, April 12-15, 2016
2016 - 2018	**President** of Croatian Humboldt Club
2017	**Chair** of 25th Croatian Humboldt Club Aniversary, Zagreb, Croatia, May 18, 2017.

INSTITUTIONAL RESPONSIBILITIES

2018	*Head of **Center of excellence for new materials and sensors**, Ruđer Bošković Institute, Croatia*
2014-2018	*Head of research unit **New functional materials** of Center of excellence for new materials and sensors, Ruđer Bošković Institute, Croatia*
2006-2015	***Deputy Chairman of the Scientific Council of Physics** , Ruđer Bošković Institute , Croatia*

2011	***Head of Molecular Physics Laboratory** / Ruđer Bošković Institute / Croatia*
2011-2012	***Main Coordinator** for the implementation of the Croatian Center for Advanced Materials and Nanotechnology appointed by three institutions: Ruđer Bošković Institute, University of Zagreb and Institute of Physics.*
2010	*2012 **Organizer and proposer of the RBI new division**: Institute for Functional Materials and Nanostructures which was supported by 90 employee of RBI.*
1997- 2001	***Treasurer**, Croatian Physical Society*

INVITED LECTURES

(CHRONOLOGICALLY; HOME AND INTERNATIONAL)

1. ***The effects of crystal size on the Raman spectra of nanophased Cd_xSe_{1-x}, TiO_2 and GaAs***, International Conference on Physics and Technology of Nanostructured, Multicomponent Materials, Uzghorod, Ukraine, 1998.
2. ***Comparison of high resolution transmission electron microscopy and low frequency Raman scattering in determination of particles size distribution of nanosized TiO_2.*** *1st International Workshop on Nanoscale Spectroscopy and Its Applications to Semiconductor Research*, Trieste, Italy, 2000.
3. **E*xperimental observation of optical amplification in silicon nanocrystals*, *"Optical Amplification and Stimulation in Silicon"*** NATO Advanced Research Workshop TOWARDS THE FIRST SILICON LASER, Trento, Italy, 2002.
4. ***Application and Development of the LPCVD Process on Ruđer Bošković Institute,*** The 26th International Conv. MIPRO, Opatija, Croatia 19.-23.05. 2003.
5. ***Photonics Based on Nano-Silicon,*** The 27th International Convention MIPRO, 2004 Opatija, Croatia.
6. ***Vibracijska svojstva nano-čestičnih materijala,*** ZNANSTVENI PROJEKTI I PROGRAMI, Klub hrvatskih humboltovaca, Zagreb, 03.04.2004.
7. ***Tehnoloski projekt "Usvajanje i razvoj LPCVD proces,*** ZNANSTVENI PROJEKTI I PROGRAMI, Klub hrvatskih humboltovaca, Zagreb, 03.04.2004.
8. ***Raman Technique in Determination of Size Distribution of Oxide and Semiconductor Nanoparticles***, International Conference on Opto-electronics and Spectroscopy of Nano-Structured Thin films and Materials, 02.-05.08.2004. Peking, China
9. ***Low Frequency Raman Scattering of Glasses Containing Si Nanoparticles,*** The 28th International Convention MIPRO, 2005 Opatija, Croatia.
10. ***Raman scattering technique in characterisation of glasses containing silicon nanoparticles for optoelectronics,*** Barcelona, ICTON, 2005.
11. ***Nanocomposite Photonics Materials*****,** MIPRO, 2005 Opatija, Croatia.
12. ***Nanocomposite Photonic Glasses and Confined Structures Tailoring Er3+ Spectroscopic Properties***, MIPRO, 2007, Opatija, Croatia.
13. **Low Frequency Coherent Raman Scattering of Spherical Acoustical Vibrations of Three-Dimensional Self-Organized Germanium Nanocrystals**, 3rd International Conference ”Smart Materials, Structures and Systems” - Smart Optics, CIMTEC 2008, Acireale, Italy.
14. ***Low frequency Raman scattering in characterization of nanostructured materials*****, E-MRS Fall Meeting**, Warszawa, Poland, September 15-19, 2008,
15. ***Optical Properties and Fabrication of Glass-Based Erbium Activated Micro-Nano Photonic Structures*****,** Croatia, MIPRO, Opatija, 26-30. 5. 2008.
16. ***Low-Frequency Raman Scattering in Materials Research*****,** Plenary talk, European Conference of Molecular Spectroscopy (EUCMOS) 2008, Croatia, Opatija, 31.08-05.09. 2008.
17. ***Rare-earth-activated nano-structures fabricated by sol-gel route***, 32nd International Convention MIPRO, Opatija, May 2009.
18. ***Low frequency Raman scattering of nanostructured materials***, The 2nd International Meeting on Clusters and Nanostructured Materials (CNM-2), Uzhgorod , Ukraine
    27–30. 09. 2009.
19. ***Porous Silicon by Electrochemical Anodisation of Silicon Epitaxial Layer, Silicon Polycrystalline Layer and Silicon on Insulator as New Substrates for Sensing Applications,*** NATO Advanced Research Workshop Technological Advances in CBRNE

Sensing and Detection for Safety, Security, and Sustainability, Yerevan, Armenia, Sept. 29-Oct. 02, 2012.

20. ***Vibrations of Nanoparticles*****,** 13th International Ceramics Congress, CIMTEC 2014, Symposium CL, Inorganic Materials Systems for Optical and Photonic Applications, June 8-20/2014, Montecatini Terme, Italy.
21. ***Materials Science Research in Croatia and Its Sustainability***, International sustainability Days "Euro-Ibsa" - workshop, Wurzburg, Germany, 2014.
22. ***Istraživanja naprednih materijala u Republici Hrvatskoj i njihova održivost***, 5. Festival znanosti, Sinj, 14-18 rujan, 2014.
23. ***Silicon Nanostructuring for SERS Applications and Hybrid Infrared Light Sensing Device***, Progress In Electromagnetics Research Symposium PIERS 2015, Prague, July 6–9, 2015, Czech Republic.
24. ***Silicon Nanostructuring For Advanced Applications***, 22nd International Scientific Meeting on Vacuum Science and Technique, Slovenian Society for Vacuum Technique and Croatian Vacuum Society, Osilnica, 21-22 May 2015, Slovenia.
25. ***Silicon Nanostructuring For Advanced Applications***, International Workshop on Soft &Complex Matter, Norwegian Academy of Science and Letters, Oslo, October 15-16, Norway.
26. ***Development and applications of SERS techniques***, Mediterranean Conference on the Applications of the Mössbauer Effect, Zadar, 7-10 June 2015, Croatia.
27. ***Perspektive razvoja novih tehnologija u Centru izvrsnosti za napredne materijale i senzore***, 6. Festival znanosti, Sinj, 28.-29. listopad 2015.
28. ***Nanostrukturiranje silicija za napredne primjene,*** Centar izvrsnosti za znanost i tehnologiju, Split, 2. rujan 2015.
29. ***Silicon Nanostructuring For Advanced Applications***, институт проблем машиноведения РАН, Sankt-Peterburg, Rusija, Dezember 13, 2016.
30. ***Nano- and microstructured silicon/organic hybrid near-infrared photodetectors***, "Silicon Photonics and Photonic Integrated Circuits" conference of SPIE Photonics Europe, 3-7 April 2016, Brussels, Belgium.
31. **Development and Applications of Silicon Nanostructuring**, Annual International Workshop on Soft & Complex Matter, Norwegian Academy of Science and Letters, Oslo, Norway, October 6-7, 2016.
32. **Development and Applications of Silicon Nanostructuring**, 16th Joint Vacuum Conference/14th European Vacuum Conference/23th Croatian Slovenian International Scientific Meeting on Vacuum Science and Technique, Portorož, Slovenia, June 6-10, 2016.
33. **Opto-Electronic Devices and Sensors Based on Nanostructured Silicon**, EAGLES International Conference on Rare-Earth Doped Glass Materials and Fibre Lasers, MPNS COST MP1401, 18-19 October 2016, Povo-Trento, Italy
34. **Nanostructured silicon hybrid devices for IR light sensing and SERS detection**, FORESEEN consortium meeting, April 21, 2017, Paris, Francuska
35.

PAPERS

(CHRONOLOGICALLY; RESEARCH BOOKS, HOME AND INTERNATIONAL RESEARCH JOURNALS, HOME AND INTERNATIONAL CONFERENCE PROCEEDINGS; **PLEASE WRITE THEIR IMPACT FACTOR**)

Mile Ivanda's 5-year track-record, Five publications (*-corresponding author):

1. *T Jančі, D Valinger, JG Kljusurić, L Mikac, S Vidaček, M Ivanda*, Determination of histamine in fish by Surface Enhanced Raman Spectroscopy using silver colloid SERS substrates, Food Chemistry 224, 48-54, (2017). IF=4.85, Cit.=15.*
2. *L Mikac, M Ivanda*, V Đerek, M Gotić, Influence of mesoporous silicon preparation condition on silver clustering and SERS enhancement, J. Raman Spectr. 47, 1036-1041, 2016. IF=3.01, Cit.=14.*
3. *V. Đerek, E. D. Głowacki, M. Sytnyk, W. Heiss, M. Marciuš, M. Ristić, M. Ivanda*, and N. S. Sariciftci, Enhanced near-infrared response of nano- and microstructured silicon/organic hybrid photodetectors, Applied Physics Letters 107, 083302 (2015). IF=3.41, Cit.=16.*
4. *M Kosović, M Balarin, M Ivanda, V Đerek, M Marciuš, M Ristić, O Gamulin, Porous silicon covered with silver nanoparticles as surface-enhanced Raman scattering (SERS) substrate for ultra-low concentration detection, Applied spectroscopy 69 (12), 1417-1424, 2015. IF=1.52, Cit.=18.*
5. *D. Ristic, M. Mazzola, A. Chiappini, A. Rasoloniaina, P: Féron, R. Ramponi, G. Righini, G. Cibiel, M.Ivanda*, and M. Ferrari, Tailoring of the free spectral range and geometrical cavity dispersion of a microsphere by a coating layer, Optics Letters 39, 5173–5176 (2014), IF=3.39, Cit.=22.*

List of 15 selected publications:

6. M. Ivanda, I. Hartmann, and W. Kiefer, *Boson peak in Raman spectra of amorphous gallium arsenide: Generalization to amorphous tetrahedral semiconductors*, Phys. Rev. B 51, 1567-1571 (1995). IF=3.77, Cit.=27
7. S. Musić, M. Gotić, M. Ivanda, S. Popović, A. Turković, R. Trojko, A. Sekulić, and K. Furić, *Chemical and microstructural properties of TiO_2 synthesized by sol-gel procedure*, Mater. Sci. & Engineering B 47, 33-40 (1997). IF=1.88, Cit.=210
8. M. Ivanda, S. Musić, M. Gotić, A. Turković, A. M. Tonejc and O. Gamulin, *The effects of crystal size on the Raman spectra of nanophase TiO_2,* J. Mol. Struct. 480-481, 641-644 (1999). IF=1.45, Cit.=41
9. M. Ivanda, K. Babocsi, C. Dem, M. Schmitt, M. Montagna, W. Kiefer, *Low Wavenumber Raman Scattering From Nanosized CdS_xSe_{1-X} Crystals Embeded In Glass Matrix,* Phys. Rev. B 67, 235329-235337 (2003). IF=3.77, Cit.=63
10. M. Ivanda, A. Hohl, M. Montagna, G. Mariotto, M. Ferrari, Z. Crnjak Orel, A. Turković, and K. Furić, *Raman Scattering Of Acoustical Modes Of Silicon Nanoparticles Embedded In Silica Matrix,* J. Raman Spectr. 37, 161-165 (2006). IF=3.13, Cit.=25
11. M. Ivanda, K. Furić, S. Musić, M. Ristić, M. Gotić, D. Ristić, A.M. Tonejc, I. Djerdj, M. Montagna, M. Ferrari, A. Chisaera, Y. Jestin, G. C. Righini, W. Kiefer, *Low Frequency Raman Scattering of Nanoparticles and Nanocomposite Materials*, *The review paper in the Special Issue: Raman Spectroscopy on Nanomaterials*, J. Raman Spectr. 38, 647-659 (2007). IF=3.13, Cit.=40
12. M Ristić, M Ivanda, S Popović, S Musić, *Dependence of nanocrystalline SnO2 particle size on synthesis route*, J. Non-Cryst. Solids 303, 270-280 (2002). IF=1.59, Cit.=110
13. M Ristić, S Musić, M Ivanda, S Popović, *Sol–gel synthesis and characterization of nanocrystalline ZnO powders,* J. Alloys and Compounds 397, L1-L4 (2005). IF=2.39, Cit.=95
14. D. Ristić, M. Ivanda, K. Furić, U.V. Desnica, M. Buljan, M. Montagna, M. Ferrari, A. Chiasera, Y. Jestin, *Raman scattering on quadrupolar vibrational modes of spherical nanoparticles*, Journal of Applied Physics 104, 073519 (2008). IF=2.22, Cit.=9
15. Buljan, M., Desnica, U.V., Ivanda, M., Radić, N., Dubček, P., Dražić, G., Salamon, K., Bernstorff, S., Holý, V., *Formation of three-dimensional quantum-dot superlattices in amorphous systems: Experiments and Monte Carlo simulations*, Physical Review B - Condensed Matter and Materials Physics, 79, 035310, (2009). IF=3.77, Cit.=24
16. M Buljan, UV Desnica, G Dražić, M Ivanda, N Radić, P Dubček, K Salamon, *The influence of deposition temperature on the correlation of Ge quantum dot positions in amorphous silica matrix,* J. Nanotechnology 20, 085612 (2009). IF=3.84, Cit.=24
17. D. Ristić, M. Ivanda, K. Furić , *Application of the phonon confinement model on the optical Phonon mode of silicon nanoparticles*, J. Mol. Struct., 924-926, 291-293 (2009). IF=1.45, Cit.=7
18. Buljan, Maja; Bogdanović Radović, Ivančica; Karlušić, Marko; Desnica, Uroš; Radić, Nikola; Skukan, Natko; Dražić, Goran; Ivanda, Mile; Gamulin, Ozren; Matej, Zdenek; Valeš, Vaclav; Grenzer, Joerg; Cornelius, Thomas; Metzger, Hartmund Till; Holy, Vaclav, *Generation of an ordered Ge quantum dot array in an amorphous silica matrix by ion beam irradiation*, Physical Review B - Condensed Matter and Materials Physics. 81 (2010) ; 085321-1-085321-8 . IF=3.77, Cit.=16
19. Ristić, D., Ivanda, M., Speranza, G., Siketić, Z., Bogdanović-Radović, I., Marciuš, M., Ristić, M., Gamulin, O., Musić, S., Furić, K., Righini, G.C., Ferrari, M., *Local site distribution of oxygen in silicon-rich oxide thin films: A tool to investigate phase separation*, J. Phys. Chem. C, 116 (2012) 10039-10047. IF=4.81, Cit.=3
20. M. Ivanda, M. Balarin, O. Gamulin, V. Đerek, D. Ristić, S. Musić, M. Ristić, M. Kosović, *Porous Silicon by Galvanostatic Electrochemical Anodisation of Epitaxial Silicon, Polycrystalline Silicon and Silicon on Insulator Layers*, NATO Science for Peace and Security, Series - B: Physics and Biophysics, Title of the book: *Technological Advances in CBRN Sensing and Detection for Safety, Security and Sustainability*, Editors: A. Vaseashta and S. Khudaverdyan, Springer *pp. 303-320* (2013). – chapter in book

MAJOR SCIENTIFIC COLLABORATIONS

***Wofgang Kiefer**, Raman spectroscopy, semiconductor nanoparticles, University of Würzburg, Germany*
***Maurizio Montagna**, Raman spectroscopy, nanoparticles, , University of Trento, Italy*
***Maurizio Ferrari**, photonics, transparent ceramics, spherical optical resonators, CNR-IFN, Trento, Italy*
***Giancarlo Righini**, silica spherical optical microresonators, IFAC, Firenze, Italy*
***Serdar Saritcfitci**, hybrid organic devices, LIOS, Linz, Austria*
***Vladymir Mitsa**, halcogenide semiconductors, University of Uzghorod, Ukraine*
***Gino Mariotto**, Raman spectroscopy, semiconductors, University of Trento, Italy*

OTHER RESEARCH ACTIVITIES

(CHRONOLOGICALLY; CHIEF EDITOR OR EDITOR OF RESEARCH BOOK, HOME AND INTERNATIONAL RESEARCH JOURNALS, HOME AND INTERNATIONAL CONFERENCE PROCEEDINGS AND OTHER)

Đerek V, Głowacki E D, Sariciftci S N, Ivanda M, Optoelektronischer Infrarotsensor, Austrian National Patent application (pat.app.nr. A 50534/2014) 2018.

COMPUTER SKILLS

Excellent

DESCRIPTION OF RESEARCH TOPICS

M. Ivanda has been published 149 papers with 2600 citations and Hirsh index H=26 (Web of Science) and Google Scholar (cited 3330 times; H-index 28) in the area of sensing properties, structure and vibrational dynamics of semiconductor and oxide nanostructures.

The research topics:

The research is focused on nanostructural silicon thin films for advanced applications. The Low Pressure Chemical Vapor Deposition (LPCVD) and Physical Vapor Deposition (PVD) were implemented and developed at Ivanda's group. The different type of silicon based thin films are preparing like silicon reach oxide, silicon reach nitride, amorphous silicon, polycrystalline silicon, doping with boron, phosphorus, erbium and europium, silicon carbide and porous silcon by electrochemical etching. The structural, optical, electrical and transport properties are investigating with a goal of development of doped silicon nanostructured films (dots, wires, porous structure) for thermoelectric elements (Peltier cooler and heater, low temperature sensor); silicon nanocrystals thin films doped with rare earths for photonics (spherical microresonators, optical amplifiers, lasers), silicon carbide thin films on silicon and porous silicon for gas and/or chemical sensing. Beside, different aspects of Raman scattering as a powerful analytic tool has been developed: low frequency Raman scattering for determination of size distribution of nanoparticles, portable Raman spectrometer as well as new techniques for SERS spectroscopy.

Nanostructured silicon for thermoelectrics

Thermoelectric (TE) devices are able to convert the waste heat form combustion engines, solar energy or from radioactive sources into electrical or some other kind of energy on a pure and non pollutant way. Silicon, the basic material of semiconductor electronics, is widely available, comparatively cheap, ecologically friendly and technologically well developed. Those are reasons enough to seek a marriage between silicon and thermoelectric properties. Recently, Ivanda's group has found a large Seebeck coefficient of 200 uV/K (the main physical property of TE materials), in a heavily boron doped polysilicon sample obtained by the LPCVD method. By using the LPCVD method, they are producing various kinds of doped silicon nanostructures (dots and wires) in order to obtain those with good TE properties. They also search for advanced TE properties on nanoporous silicon prepared by anodisation techniqe.

Novel silicon based materials for fotonics

The research include the production and the characterization of novel silicon based materials for optoelectronics, namely silicon rich oxides (nitrides), silicon oxide /silicon rich oxide (nitride) multilayers, nanocrystalline silicon and europium doped silicon nanocrystalls in silica layers. All of these new materials will be studied in combination with silica microspheres. These thin films on silica microspheres will be investigated in order to examine different non-linear properties under the high laser light intensity excitation conditions. The Stimulated Raman Scattering and optical amplification being the most promising for the construction of silicon-based laser will be searched on this silicon based thin films deposited on silica microspheres. The project includes cooperation between the IFN-CNR in Trento and the Ruđer Bošković Institute in Zagreb under the 150.000 euros

value research project.

Porous silicon for sensors

Silicon Epitaxy and Poly-Silicon layers. Silicon, an indirect gap semiconductor, can emit light with 10% efficiency at room temperature, provided that it is in the form of low-dimensional (quantum dots or wires) nanostructures. Ivanda's group is producing porous silicon from three types of silicon layers: Silicon On Insulator (SOI), Silicon Epitaxy and Poly-Silicon layers. Anodizing with DC and AC current of these layers creates new morphology that show intense photoluminescence. The research objectives are new simple and inexpensive techniques for preparation of porous silicon for the development of high sensitive gas sensors, thermoelectric and biocompatible materials. The structures with novel morphologies that exhibit strong photoluminescence were discovered. The luminescence mechanisms and the relationship between bandgap energy, luminescence energy, and size of nanostructures are investigating.

Development of new techniques of Raman spectroscopy

The group has significant contribution in development of Raman scattering technique in determination of size distribution of free nanoparticles, of the nanoparticles in matrices and more generally of the size distribution of various nanocomposite materials. Besides, the portable Raman spectrometer and new methods of SERS spectroscopy are developing for versatile application in environmental, medicine and food analysis.