

Marinova Maya

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Aged 29, Bulgarian citizen

Education and Research Experience

- 2007 - 2010 Recruited within the MANSiC project at the Transmission Electron Microscopy Laboratory, Aristotle University of Thessaloniki, Greece

The project deals with growth, characterization and device development of 3C-SiC on 6H-SiC substrates. As a member of the AUTH partner my obligations are related to the structural characterization by conventional and high resolution TEM of the grown layers.
- 2004-2006 PhD studentship at the Solid State Spectroscopy Laboratory; Condensed Matter Physics Department, Sofia University.
Thesis title: "Structure and Properties of Nano-Formations of β -FeSi₂, Embedded in Silicon Matrix by Ion Beam Synthesis" defended June, 17th 2008
- 2002-2003 MSc Physics Sofia University "St Kliment Ohridski", Department of Solid State Physics;
MSc Project: Optical dielectric function anisotropy in β -FeSi₂ layers
- 1998-2002 BSc Physics at Sofia University "St Kliment Ohridski", Department of Solid State Physics;
BSc theses title: Energy band structure and optical properties of β -FeSi₂
- 1998 Secondary school, 2nd "Prof. Nikola Marinov" school Targovishte, English language class;

Languages spoken

I speak fluently English and use German and Russian. I have basic knowledge in Greek.

Publications

- [1] "Searching for Ge Clusters inside 3C-SiC Layers Grown by Vapor-Liquid-Solid Mechanism on 6H-SiC Substrates" M. Marinova, I. Tsiaoussis, N. Frangis, E. K. Polychroniadis, O. Kim-Hak, J. Lorenzzi and G. Ferro – Materials Science Forum Volume 615-617 (2009) pp 185-188;
- [2] "8H Stacking Faults in a 4H-SiC matrix: Simple Unit Cell or Double 3C Quantum Well?" T. Robert, S. Juillaguet, M. Marinova, T. Chassagne, I. Tsiaoussis, N. Frangis, E. K. Polychroniadis and J. Camassel – Materials Science Forum - Volume 615-617 (2009) pp 339-342.
- [3] "Combined Structural and Optical Studies of Stacking Faults in 4H-SiC Layers grown by Chemical Vapour Deposition" Maya Marinova, Teddy Robert, Sandrine Juillaguet, Ioannis Tsiaoussis, Nikolaos Frangis, E.K. Polychroniadis, Jean Camassel, and Thierry Chassagne – Phys. Status Solidi (A) 206, No. 8,

1924–1930 (2009) / DOI 10.1002/pssa.200881440; a poster presentation at EDS 2008 in Poitiers, France, September 14-19 2008

[4] "*Structural Analysis of Au/Ti/Al/SiC Contacts in Dependence on the Initial Composition and Annealing*" Lilyana Kolaklieva, Roumen Kakanakov, Maya Marinova, Efstathios Polychroniadis submitted for publication

[5] "*Study of the 3C-SiC nucleation from a liquid phase on a C face 6H-SiC substrate*" Olivier Kim-Hak, Gabriel Ferro, Jacques Dazod, Maya Marinova, Jean Lorenzzy, Efstathios Polychroniadis, Patrick Chaudouët, Didier Chaussende and Philippe Miele *Journal of Crystal Growth* 311 (2009) 2385–2390.

[6] "*Some recent results on the 3C-SiC structural defects*" M. Marinova, A. Mantzari, E.K. Polychroniadis – *Solid State Phenomena* – submitted;

[7] "*On the Nanostructure of SiC*" M. Marinova and E.K. Polychroniadis paper in preparation

[8] "*Defect-induced polytype transformations in LPE grown SiC epilayers on (111) 3C-SiC seeds grown by VLS on 6H-SiC*" M. Marinova, G. Zoulis, T. Robert, F. Mercier, A. Mantzari, I. Galben, O. Kim-Hak, J. Lorenzzy, S. Juillaguet, D. Chaussende, G. Ferro, J. Camassel, and E. K. Polychroniadis - *Physica B* (2009), doi:10.1016/j.physb.2009.08.128 – available on-line

[9] "*A TEM study of in-grown stacking faults in 3C-SiC layers grown by CF-PVT on 4H-SiC substrates*" by M. Marinova, F. Mercier, A. Mantzari, I. Galben, D. Chaussende, and E. K. Polychroniadis - *Physica B* (2009), doi:10.1016/j.physb.2009.08.190 – available on-line

[10] "*TEM investigation of the 3C/6H-SiC transformation interface in layers grown by sublimation epitaxy*" M. Marinova, A. Mantzari, M. Beshkova, M. Syväjärvi, R. Yakimova, E.K. Polychroniadis: *Solid State Phenomena in preparation*;

[11] "*The Influence of the Temperature Gradient on the Defect Structure of 3C-SiC Grown Heteroepitaxially on 6H-SiC by Sublimation Epitaxy*" M. Marinova, A. Mantzari, M. Beshkova, M. Syväjärvi, R. Yakimova, E.K. Polychroniadis, *Material Science Forum in preparation*

[12] "*TEM and LTPL investigations of 3C-SiC layers grown by LPE on (100) and (111) 3C-SiC seeds*" M. Marinova, T. Robert, G. Zoulis, F. Mercier, A. Mantzari, I. Galben, O. Kim-Hak, J. Lorenzzy, S. Juillaguet, D. Chaussende, G. Ferro, J. Camassel and E.K. Polychroniadis, *Material Science Forum in preparation*

[13] "*Heavily p-type doping of bulk 6H-SiC and 3C-SiC grown from Al-Si melts*" F. Mercier, D. Chaussende, I.G. Galben-Sandulache, M. Marinova, G. Zoulis, S. Juillaguet, T. Ouisse, E.K. Polychroniadis and J. Camassel, *Material Science Forum in preparation*

[14] "*Sublimation Growth and Structural Characterization of 3C-SiC on Hexagonal and Cubic SiC Seeds*", R. Vasiliauskas, M. Marinova, M. Syväjärvi, A. Mantzari, J. Lorenzzy, G. Ferro, E.K. Polychroniadis and R. Yakimova, *Material Science Forum in preparation*

[15] "*6H-type zigzag faults in low-doped 4H-SiC epitaxial layers*" T. Robert, M. Marinova, S. Juillaguet, E.K. Polychroniadis and J. Camassel *Material Science Forum in preparation*

[16] "*Sublimation Epitaxy of Cubic Silicon Carbide in Vacuum Conditions*" R. Vasiliauskas, M. Marinova, M. Syväjärvi, E.K. Polychroniadis and R. Yakimova - *Journal of Physics: Conference Series in preparation*

[17] M. Marinova, M. Baleva, G. Zlateva, "Resonance Raman and micro-Raman scattering from Si matrix with unburied β - FeSi₂ nanolayers", *Journal of Nanoscience and Nanotechnology*, **8** 775-779 (2008).

[18] M. Baleva, A. Atanassov, M. Marinova, G. Zlateva, N. Todorov, "Raman scattering of Si matrix with randomly distributed nanoparticles of semiconducting silicides in it", *Journal of Nanoscience and Nanotechnology*, **8** 768-774 (2008).

[19] Marinova, M. Baleva, E. Goranova, Experimental investigation of the band edge anisotropy of the β -FeSi₂ semiconductor, *Solid State Sciences* 10 (10), pp. 1369-1373 (2008).

[20] M. Baleva, G. Zlateva, A. Atanassov, M. Marinova, E. Polychroniadis, "Polariton modes in ion-beam synthesized Mg₂Si nanolayers" *Journal of Physics: Conference Series* 113 (1), art. no. 012042 (2008).

[21] M. Baleva, M. Marinova, A. Atanassov, "Infrared spectra of semiconducting silicides nanolayers" *Journal of Physics: Conference Series* 113 (1), art. no. 012043 (2008).

[22] M. I. Baleva, E. A. Goranova, M. M. Marinova, A. A. Atanassov, Heterojunctions between Silicon and the Semiconducting Metal Silicides β -FeSi₂ and MgSi₂, *ECS Transactions*, Volume **8 (1)**, 151-156, (2007).

[23] M. Marinova, E. Sutter, M. Baleva, Electron Microscopy Study of Ion Beam Synthesized β -FeSi₂, *Journal of Materials Science*, **42**(1) 207-214 (2007).

[24] M. Marinova, M. Baleva, E. Sutter, Structural and optical characterization of the formation of β -FeSi₂ nanocrystallites in n-type (100) Si matrix, *Nanotechnology*, **17** (8) 1969-1974 (2006).

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- a. C.M.Sun, P.S. Chan, and H.K. Tsang, Photoresponse of β -FeSi₂ precipitates in a silicon waveguide, the paper appears in *Laser and Electro-Optics Society (LEOS), The 20th Annual Meeting of IEEE*, pp. 391-392 (2007).
- b. C.M. Sun, H.K. Tsang, S.P. Wong, N. Ke, S.K. Hark, Surface morphology evolution of amorphous Fe-Si layers upon thermal annealing, *J. Phys. D: Appl. Phys.* **41**(8) 085418 (5 pp) (2008).
- c. Sun, C.M., Tsang, H.K., Wong, S.P., Ke, N., Hark, S.K. Correlation between impurities in Fe-Si amorphous layers synthesized by Fe implantation and photoluminescence property of β -FeSi₂ precipitates in Si, *Journal of Luminescence*, 128 (11), pp. 1841-1845 (2008).
- d. Sun, C.M., Tsang, H.K., Wong, S.P., Cheung, W.Y., Ke, N., Hark, S.K. Rapid thermal annealing of ion beam synthesized β -FeSi₂ nanoparticles in Si *Applied Physics Letters*, 92 (21), art. no. 211902 (2008).

[25] Maya Marinova, Genoveva Zlateva, and Mitra Baleva, Influence of the Implantation Dose and the Annealing Duration on the Raman Spectra of Ion-beam Synthesized β -FeSi₂ Layers, *Plasma Process. Polym.*, **3** (2), 229-232 (2006).

[26] M. Marinova, M. Baleva, E. Goranova, Optical dielectric function anisotropy of the β -FeSi₂ phase, *Vacuum*, **76**(2-3) 273-276 (2004).

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- a. A. Traverse, T. Girardeau, C. Prieto, D. de Sousa Meneses and D. Zanghi, Metallic nanoparticles detected by infrared spectroscopy in *Europhysics Letters* 81, 47001 (2008).

|| School and Conferences Proceedings

[1] "Searching for Ge Clusters inside 3C-SiC Layers Grown by Vapor-Liquid-Solid Mechanism on 6H-SiC Substrates" M. Marinova, I. Tsiaoussis, N. Frangis, E. K. Polychroniadis, O. Kim-Hak, J. Lorenzzi and G. Ferro - A poster presentation at ECSCRM 2008 Barcelona, Spain – September 7-11, 2008;

[2] *"Combined Structural and Optical Studies of Stacking Faults in 4H-SiC Layers grown by Chemical Vapour Deposition"* Maya Marinova, Teddy Robert, Sandrine Juillaguet, Ioannis Tsiaoussis, Nikolaos Frangis, E.K. Polychroniadis, Jean Camassel, and Thierry Chassagne - a poster presentation at EDS 2008 in Poitiers, France, September 14-19 2008;

[3] *"Silicon carbide modulated structures as a result of the introduction of 8H bands in a 4H matrix"* N. Frangis, M. Marinova, I. Tsiaoussis, E.K. Polychroniadis, T. Robert, S. Juillaguet, J. Camassel - extended abstract in the Proceedings of the EMC 2008 14th European Microscopy Congress 1-5 September 2008, Aachen, Germany;

[4] *"Structural Analysis of Au/Ti/Al/SiC Contacts in Dependence on the Initial Composition and Annealing"* Lilyana Kolaklieva, Roumen Kakanakov, Maya Marinova, Efstathios Polychroniadis, presented at the 1st IC4N-2008: International Conference from Nanoparticles and Nanomaterials to Nanodevices and Nanosystems - 16-18 June 2008 Porto Carras Grand Resort Halkidiki, Greece;

[5] *"TEM study of 3C-SiC layers grown by sublimation epitaxy on 6H-SiC substrates"* M. Marinova, M. Beshkova, A. Mantzari, M. Syväjärvi, R. Yakimova, E.K. Polychroniadis - Oral presentation and extended Abstract in the proceedings of International workshop on 3C-SiC hetero-epitaxy (HeteroSiC'09) May 6th-7th, 2009 - Catania, Italy;

[6] *"On the structure of different long-period SiC polytypes by means of electron diffraction and high resolution transmission electron microscopy"* M. Marinova, E.K. Polychroniadis - Poster presentation and extended Abstract in the proceedings of International workshop on Advanced Semiconductor Materials and Devices for Power Electronic Applications (WASMPE'09) May 6th-7th, 2009 - Catania;

[7] *"On the structural defects and the polytype stabilization in LPE grown 6H-SiC layers"* I. G. Galben-Sandulache¹, F. Mercier, M. Marinova, D. Chaussende, E. K. Polychroniadis - Extended Abstract in the proceedings of International workshop on Advanced Semiconductor Materials and Devices for Power Electronic Applications (WASMPE'09) May 6th-7th, 2009 - Catania;

[8] *"Observation of 3C zigzag faults in low-doped 4H-SiC epitaxial layers"* T. Robert, M. Marinova, S. Juillaguet, A. Henry, E.K. Polychroniadis and J. Camassel - Extended Abstract in the proceedings of International Workshop on Advanced Semiconductor Materials and Devices for Power Electronic Applications (WASMPE'09) May 6th-7th, 2009 - Catania;

[9] *"Some recent results on the 3C-SiC structural defects"* M. Marinova, A. Mantzari, E.K. Polychroniadis 2nd International Conference NANO HARD'09, 24-27 May 2009 Sozopol, Bulgaria;

[10] *"On the Nanostructure of SiC"* M. Marinova and E.K. Polychroniadis Presentation at 2nd IC4N-2009 (International Conference From Nanoparticle&Nanomaterials to Nanodevices&Nanosystems) June 28 - July 3, 2009 Rhodes, Greece;

[11] *"Defect-induced polytype transformations in LPE grown SiC epilayers on (111) 3C-SiC seeds grown by VLS on 6H-SiC"* M. Marinova, G. Zoulis, T. Robert, F. Mercier, A. Mantzari, I. Galben, O. Kim-Hak, J. Lorenzi, S. Juillaguet, D. Chaussende, G. Ferro, J. Camassel, and E. K. Polychroniadis - Oral presentation at 25th International Conference of Defects on Semiconductors (ICDS-25), St. Petersburg, Russia, 20-25 July 2009;

[12] *"A TEM study of in-grown stacking faults in 3C-SiC layers grown by CF-PVT on 4H-SiC substrates"* by M. Marinova, F. Mercier, A. Mantzari, I. Galben, D. Chaussende, and E. K. Polychroniadis - Poster presentation 25th International Conference of Defects on Semiconductors (ICDS-25), St. Petersburg, Russia, 20-25 July 2009;

- [13] "*TEM investigation of the 3C/6H-SiC transformation interface in layers grown by sublimation epitaxy*" M. Marinova, A. Mantzari, M. Beshkova, M. Syväjärvi, R. Yakimova, E.K. Polychroniadis; A poster presentation at XXI Conference on Applied Crystallography, CAC, 20-24 September, 2009, Zakopane, Poland;
- [14] "*Typical structural defects in 3C-SiC layers grown by various methods on different substrates*" M. Marinova, M. Mantzari and E.K. Polychroniadis A poster presentation and extended abstract in the Proceedings of XXV Panhellenic Conference on Solid State Physics and Materials Science, Thessaloniki 20-23 September 2009;
- [15] "*The Influence of the Temperature Gradient on the Defect Structure of 3C-SiC Grown Heteroepitaxially on 6H-SiC by Sublimation Epitaxy*" M. Marinova, A. Mantzari, M. Beshkova, M. Syväjärvi, R. Yakimova, E.K. Polychroniadis, Poster presentation abstract send to the ICSCRM'09 October 11-16th 2009 Nuremberg Germany;
- [16] "*TEM and LTPL investigations of 3C-SiC layers grown by LPE on (100) and (111) 3C-SiC seeds*" M. Marinova, T. Robert, G. Zoulis, F. Mercier, A. Mantzari, I. Galben, O. Kim-Hak, J. Lorenzzi, S. Juillaguet, D. Chaussende, G. Ferro, J. Camassel and E.K. Polychroniadis, Poster presentation at ICSCRM'09 October 11-16th 2009 Nuremberg Germany;
- [17] "*Heavily p-type doping of bulk 6H-SiC and 3C-SiC grown from Al-Si melts*" F. Mercier, D. Chaussende, I.G. Galben-Sandulache, M. Marinova, G. Zoulis, S. Juillaguet, T. Ouisse, E.K. Polychroniadis and J. Camassel, ICSCRM'09 October 11-16th 2009 Nuremberg Germany;
- [18] "*Sublimation Growth and Structural Characterization of 3C-SiC on Hexagonal and Cubic SiC Seeds*", R. Vasiliauskas, M. Marinova, M. Syväjärvi, A. Mantzari, J. Lorenzzi, G. Ferro, E.K. Polychroniadis and R. Yakimova, ICSCRM'09 October 11-16th 2009 Nuremberg Germany;
- [19] "*6H-type zigzag faults in low-doped 4H-SiC epitaxial layers*" T. Robert, M. Marinova, S. Juillaguet, E.K. Polychroniadis and J. Camassel, ICSCRM'09 October 11-16th 2009 Nuremberg Germany;
- [20] "*Sublimation Epitaxy of Cubic Silicon Carbide in Vacuum Conditions*" R. Vasiliauskas, M. Marinova, M. Syväjärvi, E.K. Polychroniadis and R. Yakimova, Sixteenth International Summer School on Vacuum, Electron and Ion Technologies 28 September–2 October 2009, Sunny Beach, Bulgaria;
- [21] M. Marinova, M. Baleva, E.K. Polychroniadis, I. Tsiaoussis Transmission electron microscopy study of the formation of ion-beam synthesized Mg₂Si nanolayers related to the treatment, International Workshop on Semiconductor NANOstructures 2007, Bad Honnef, Germany, June 13th - 16th 2007;
- [22] M. Baleva, M. Marinova, and A. Atanasov, The vibrational spectra of nanolayers polariton modes as a tool for a direct determination of the longitudinal modes frequencies in the particular case of semiconducting silicides, International Workshop on Semiconductor NANOstructures 2007, Bad Honnef, Germany, June 13th - 16th 2007;
- [23] M. I. Baleva, E. A. Goranova, M. M. Marinova, A. A. Atanasov, Heterojunctions between Silicon and the Semiconducting Metal Silicides β -FeSi₂ and MgSi₂, International Conference on Semiconductor Technology for Ultra Large Scale Integrated Circuits and Thin Film Transistors (ULSIC vs. TFT), July 28 - August 3, 2007, Barga, Italy;

- [24] M. Baleva, A. Atanassov, M. Marinova, G. Zlateva, N. Todorov, *Raman scattering of Si matrix with randomly distributed semiconducting nanoparticles in it*, International Workshop on Nanostructured Materials (NANOMAT 2006);
- [25] M. Marinova, M. Baleva, G. Zlateva, *Resonance Raman and micro-Raman scattering from Si matrix with unbarriered β -FeSi₂ nanolayers*, International Workshop on Nanostructured Materials (NANOMAT 2006);
- [26] M. Marinova, M. Baleva, and E. Sutter, Structural and optical characterization of the formation of beta-FeSi₂ nanocrystallites in n-type (100) Si matrix, Meeting in Physics, April 2005, Sofia University;
- [27] M. Marinova, G. Zlateva, and M. Baleva, *Raman Study of the Effect of the Annealing on the Ion-beam synthesized β -FeSi₂ Layers* Proceedings of the International School "New Developments in Optics and Related Fields: Modern Techniques, Materials and Applications" A NATO Advanced Study Institute Erice-Sicily, Italy: June 6 – June 21, 2005, p. 42, edited by Ottavio Forte;
- [28] Maya Marinova, Mitra Baleva, Eli Sutter, *On the Band Diagram of β -FeSi₂/Si Heterojunction between n-Si Matrix and β -FeSi₂ Nanocrystallites Embedded in it*, VEIT'05, Fourteenth International Summer School on Vacuum, Electron and Ion Technologies, 12-16 September, 2005, p. 114, Sunny Beach, Bulgaria;
- [29] Mitra Baleva, Peter Gladkov, Ekaterina Goranova, and Maya Marinova, *On the Photoluminescence of Si with Inclusions of β -FeSi₂ Phase, Formed by Ion-beam Synthesis*, VEIT'05, Fourteenth International Summer School on Vacuum, Electron and Ion Technologies, 12-16 September, 2005, p. 114, Sunny Beach, Bulgaria;
- [30] Maya Marinova, Genoveva Zlateva, and Mitra Baleva, *Influence of the Implantation Dose and the Annealing Duration on the Raman Spectra of Ion-beam Synthesized β -FeSi₂ Layers*, VEIT'05, Fourteenth International Summer School on Vacuum, Electron and Ion Technologies, 12-16 September, 2005, p. 114, Sunny Beach, Bulgaria;
- [31] M. Marinova, M. Baleva and E. Goranova, *Interband transitions in layers of β -FeSi₂ precipitates in Si matrix*, Meeting in Physics, April 2004, Sofia University;
- [32] M. Marinova, M. Baleva, E. Goranova, Energy Band Diagram of the β -FeSi₂/Si heterojunction, School on renewable energy sources, Varna 1-6/09/2004;
- [34] M. Marinova, M. Baleva, E. Goranova, *On the anisotropy of the optical dielectric function of the β -FeSi₂ layers*, Proceedings of the Fifth General Conference of the Balkan Physical Union BPU-5, ed. S. Jokic, A. Balaz, Z. Nikolic, August, Vrnjachka Bania, Serbian Physical Society Belgrade, (2003), p. 865.