PUBLICATIONS

Edited volumes

1) Guest editor of the journal “Diamond and Related Materials", Vol.6, No10, on which the proceedings of the "European Conference on Silicon Carbide & Related Materials '96" have been published.

2) Guest editor of the journal “Materials Science & Engineering", Vol 80/1-3, (2001), on which the proceedings of the "EXMATEC 2000" have been published.

3) Guest editor of the journal “Materials Science Forum", Vol.897, (2017) on which the proceedings of the "European Conference on Silicon Carbide & Related Materials '2016" have been published.

4) Editor of a book entitled “Advancing Silicon Carbide Electronics Technology I: Metal Contacts to Silicon Carbide: Physics, Technology, Applications”, Published as part of the book series Materials Research Foundations, Volume 37 (2018), ISSN 2471-8890 (Print) ISSN 2471-8904 (Online)

5) Editor of a book entitled “Advancing Silicon Carbide Electronics Technology II: Process technology of Silicon Carbide: Physics, Technology, Applications”, Published as part of the book series Materials Research Foundations, Volume 69 (2020), ISSN 2471-8890 (Print) ISSN 2471-8904 (Online)

Chapter in books

1) Chapter entitled “Processing and Characterization of Ohmic Contacts to Silicon Carbide” co-authored with K. Vasilevskiy and N. Wright in “Advancing Silicon Carbide Electronics Technology I: Metal Contacts to Silicon Carbide: Physics, Technology, Applications”, Materials Research Foundations, Volume 37 (2018), ISSN 2471-8890 (Print) ISSN 2471-8904 (Online)

2) Chapter entitled “Silicon Carbide Doping by Ion Implantation” co-authored with P. Godignon and F. Torregrosa in “Advancing Silicon Carbide Electronics Technology II: Core Technologies of Silicon Carbide Device Processing”, Materials Research Foundations, Volume 69 (2020), ISSN 2471-8890 (Print) ISSN 2471-8904 (Online), DOI: 10.21741/9781644900673

3) Chapter entitled “Plasma Etching of Silicon Carbide” co-authored with J. Pezoldt and V. Veliadis in “Advancing Silicon Carbide Electronics Technology II: Core Technologies of Silicon Carbide Device Processing”, Materials Research Foundations, Volume 69 (2020), ISSN 2471-8890 (Print) ISSN 2471-8904 (Online), DOI: 10.21741/9781644900673

4) Chapter entitled “Fabrication of Silicon Carbide Nanostructures and Related Devices” co-authored with M. Bosi and K. Rogdakis in “Advancing Silicon Carbide Electronics Technology II: Core Technologies of Silicon Carbide Device Processing”, Materials Research Foundations, Volume 69 (2020), ISSN 2471-8890 (Print) ISSN 2471-8904 (Online), DOI: 10.21741/9781644900673

5) Chapter entitled “SiC and GaN power devices” co-authored with V. Veliadis, S-H. Ryu, K. Vasilevskiy, S. Pavlidis, A. Salemi, Y. Zhang in “More-than-Moore devices and integration for semiconductors” edited by Francis Balestra and Francesca Iacopi (2023). Springer, Cham. https://doi.org/10.1007/978-3-031-21610-7_2

Technical reports

Dr. Zekentes has written more than 100 technical and progress research reports to sponsoring agencies. Nevertheless, the following ones are outstanding due either to their consequences or to the fact that they are equivalent to book chapters.

1) “MBE growth, processing and physical characterization of GaAlAs/InGaAs/GaAs Hall-effect sensors structures”
K. Zekentes
Deliverable to Schlumberger Industries, Montrouge, France (1993).

2) "Development of Quantum Well Infrared Photodetectors based on GaAlAs/GaAs materials system"
K. Zekentes
Greek General Secretariat for Research & Technology, Operational Program for Research and Technology, Project EPET-535, Athens (1999).

3) "Microwave Switching Units Based on 4H-SiC p-i-n Diodes", Final report of NATO Science for Peace Project SICPIN - SfP/978011, (May 2007).

4) "Detailed electrical and mechanical (packaging) specifications of SiC components"
Deliverable to European Space Agency, Project "SiC Device In Power Designs for Space Applications" / RFQ /3-12168/07/NL/LvH", (March 2009)

5) "Landscape of SiC components and the Greek HV electronic industry. Detailed analysis of the technology and the corresponding applications for the SiC Static Induction Transistors".
Deliverable to European Space Agency, Project "SiC Device In Power Designs for Space Applications" / RFQ /3-12168/07/NL/LvH", (December 2009)

Patents

1) "Method of making an ohmic contact to p-type silicon carbide, comprising titanium carbide and nickel silicide", K. Vassilevski, K. Zekentes, U.S. Patent No. 6,599,644 issued on July 29, 2003 and Canadian patent No 08-888998CA issued on September 3, 2008.

2) "Junction Field-Effect Transistor and associated manufacturing method"
Olfa Karker, Valérie Stambouli, Edwige Bano, Konstantinos Zekentes, International Patent Office, Publication Date 20.03.2025, International Application No. PCT/EP2024/075138, International Filing Date 09.09.2024 WO2025056473, https://patentscope.wipo.int/search/en/WO2025056473
Under examination.

Publications in peer-reviewed journals included in ISI/SCOPUS Citation Indexes

1) "Weak Localization of 2D electron gas in GaAs-GaAlAs heterostructures under hydrostatic pressure"
K.Zekentes, S.Ravanomanjato, R.Piotrzkowski, E.Litwin-Staszewska, J.L.Robert
Surf. Science 228, 1990, pp. 449-452

2) "Pressure induced Γ-Γ to Γ-X tunneling crossover in GaAs-GaAlAs heterostrucures"
K.Zekentes, J.M.Mercy, J.L.Robert, Z.Hatzopoulos, A.Christou
Superlattices and Microstructures, Vol. 10, No 1, 1991, pp. 73

3) "Electrical transport study of pseudomorphic heterostructures InGaAs/InAlAs on Si and InP substrates".
K.Zekentes, A.Georgakilas, M.Lagadas, K.Michelakis, A.Christou, J.M.Mercy, L.Konczewicz, J.L.Robert
Sensors and Actuators,Vol. 33, No 1-2, 1992, pp. 67-70

4) "Electric field dependence of interband transitions in $In_{0.53}Ga_{0.47}As$/ $In_{0.52}Al_{0.48}As$ single quantum wells by room temperature electrotransmittance"
A. Dimoulas, K.P. Giapis, J. Leng, G. Halkias, K. Zekentes, A. Christou.
J. Appl. Phys. 72 (5), 1 Sept 1992, pp. 1912-1917

5) "Optical properties of InGaAs films embedded in plasma etched InP wells"
A. Georgakilas, A. Christou, P. Lefebvre, J. Allegre, K. Zekentes, G. Halkias
Appl. Phys. Lett. 61(7), August 1992, pp. 798-800

6) "Assymetric Fabry-Perot p-i-n multiple quantum well optical modulators grown on GaAs and Silicon substrates"
A. Dimoulas, K. Zekentes, E. Aperathitis, A. Georgakilas, J. Leng, P. Panayotatos, A. Christou.
Superlattices and Microstructures, Vol. 12, No 2, 1992, 145

7) "Temperature dependence of the photoreflectance of strained and lattice matched InGaAs/InAlAs single quantum wells"
Y. Baltagi, S. Moneger, A. Tabata, T. Benyattou, C. Bru, A. Georgakilas, K. Zekentes, G. Halkias
Appl. Surf. Science, 63, 1993, pp. 172-176

8) "Characterization of lattice-matched and strained GaInAs/AlInAs HEMT structures by photoluminescence spectroscpy"

A. Tabata, T. Benyattou, G. Guillot, A. Georgakilas, K. Zekentes, G. Halkias
Appl. Surf. Science, 63, 1993, pp. 182

9) "Magneto-luminescence study of Be δ-doped GaAs-GaAlAs quantum wells under hydrostatic pressure"
S. G. Lyapin, A. Raymond, P. Vicente, M. Kubisa, J.L. Sauvajol, K. Zekentes, Z. Hatzopoulos
Jpn. J. Appl. Phys. Vol 32,1993, suppl. 32-1, pp. 132-134

10) "Frequency resolved admittance measurements on InGaAs/InAlAs single quantum wells applied to determine the conduction band offset and the capture time constant"
J.M. Lopez-Villegas, P. Roura, J. Bosch, J.R. Morante, A. Georgakilas, K. Zekentes
J. Electrochem. Soc., Vol. 140, No. 5, May 1993, pp. 1492-1495

11) "A comprehensive optimization of InAlAs Molecular Beam Epitaxy for InGaAs/InAlAs HEMT Technology"
A. Georgakilas, G. Halkias, A. Christou, N. Kornilios, C. Papavassiliou, K. Zekentes, G. Konstantinidis, F. Peiro, A. Cornet, S. Ababou, A. Tabata, G. Guillot
J. Electrochem. Soc., Vol. 140, No. 5, May 1993, pp. 1503-1509

12) "Material problems for the development of InGaAs/InAlAs HEMT's technology"
K. Zekentes, G. Halkias, A. Dimoulas, N. Kornilios, A. Tabata, T. Benyattou, G. Guillot, J.R. Morante, F. Peiro, A. Cornet, A. Georgakilas, A. Christou
Mat. Sci. Eng. B 20, 1993, pp. 21-25

13) "Interface defects and inhomogeneities induced by alloy clustering in InAlAs buffer layers grown on InP"
F. Peiro, A. Cornet, J.R. Morante, A. Georgakilas, K. Zekentes, G. Halkias
Appl. Surf. Science, 65/66, 1993, pp. 447-454

14) "Photo-induced current transient spectroscopy of $In_{0.52}Al_{0.48}As$ semi-insulating layers grown on InP by molecular beam epitaxy"
A. Kalboussi, G. Marrakchi, A. Tabata, G. Guillot, G. Halkias, K. Zekentes, A. Georgakilas, A. Christou
Mat. Sci. Eng. B 22, 1993, pp. 93-96

15) "Photoreflectance studies of lattice-matched and strained InGaAs/InAlAs single quantum wells"
S. Moneger, Y. Baltagi, T. Benyattou, A. Tabata, B. Ragot, G. Guillot, A. Georgakilas, K. Zekentes, G. Halkias
J. Appl. Phys. 74(2), July 1993, pp. 1473-143

16) "Degenerate electron gas effects in the modulation spectroscopy of pseudomorphic $Al_{0.32}Ga_{0.68}As/In_{0.15}Ga_{0.85}As/GaAs$ high electron mobility transistor structures"
A. Dimoulas, K. Zekentes, M. Androulidaki, N. Kornelios, C. Michelakis, Z. Hatzopoulos
Appl. Phys. Lett. 63(10), September 1993, pp. 1417-1419

17) "Room-temperature photoreflectance as an efficient tool for study of the crystalline quality of InAlAs layers grown on InP substrates"
S. Moneger, A. Tabata, C. Bru, G. Guillot, A. Georgakilas, K. Zekentes, G. Halkias
Appl. Phys. Lett. 63(12), September 1993, pp. 1654-1656 and in Mat. Sci. and Eng. B 21, 1993, pp. 177-180

18) "Fractional dimensionality of weakly localized electrons in GaAs-$Ga_{0.7}Al_{0.3}As$ heterostructures"
S. Ravanomanjato, K.A. Zekentes, J.L. Robert, W. Zawadzki
Europhysics Lett. 24(7), 1993, pp. 589-594

19) "Oscillator strength of the E_1HH_1 excitonic transition as a function of magnetic field in modulation doped GaAlAs/GaAs quantum well"
P. Vicente, A.V. Kavokin, A. Raymond, S. G. Lyapin, K. Zekentes, D. Dur, W. Knap
Jour. de Physique IV C5, Vol. 3, (Proc. Int. Conf. Optics Excitons Confined Systems, Sept. 1993, Montpellier, France) 1993, pp. 323-326.

20) "High sensitivity Hall sensors with low thermal drift using AlGaAs/InGaAs/GaAs heterostructures"
V. Mosser, S. Contreras, S. Aboulhouda, Ph. Lorenzini, F. Kobbi, J.L. Robert, K. Zekentes
Sensors and Actuators A43, 1994, pp.135-140

21) "Electrical transport Quantum effects in the $In_{0.53}Ga_{0.47}As/In_{0.52}Al_{0.48}As$ heterostructures on silicon"
A. Georgakilas, A.Christou, K.Zekentes, J.M.Mercy, L.K.Konczewicz, A.Vila, A.Cornet
J. Appl. Phys. **76** (3), Aug. 1994, pp.1948-1950

22) “Determination of the basic parameters of pseudomorphic GaInAs quantum wells by means of simultaneous transport and optical investigations”
E. Litwin-Staszewska, F. Kobbi, M. Kamal-Saadi, D. Dur, S. Skierbiszewski, H. Sibari, K. Zekentes, V. Mosser, A. Raymond, W. Knap, J.L. Robert
Solid St. Electronics Vol. 37(4-6), 1994, pp. 665-667

23) "TEM analysis of InGaAs/InAlAs epitaxial layers grown over InP patterned substrates"
F. Peiro, A. Cornet, J.R. Morante, K. Zekentes, A. Georgakilas
Materials Letters 21, Dec.1994, pp. 371-375

24) “Carbonization of Si-surface by solid-source MBE”
K.Zekentes, R. Callec, K.Tsagaraki, B.Sagnes, G.Arnaud, J.Pascual, J.Camassel
Mat. Sci. Eng. B29, 1995, pp. 138-141

25) ”Electron traps in β-SiC grown by chemical vapor deposition on silicon (100) substrates”
K.Zekentes, M.Kayambaki, G.Konstantinidis
Appl. Phys. Lett 66 (22), May 1995, pp. 3015-3017

26) "Early stages of growth of β-SiC on Si by MBE"
K. Zekentes, V. Papaioannou, B. Pecz and J. Stoemenos
J. Cryst. Growth, Vol.157, December 1995, pp. 392-399

27) “Weak antilocalization and spin precession in quantum wells”
W.Knap, C.Skierbiszewski, A. Zduniak, E.Litwin-Staszewska, D. Bertho, F.Kobbi, J.L.Robert, G.E. Pikus, F.G. Pikus, Y.B.Lyanda-Geller, S.V.Iordanskii, V.Mosser, K.Zekentes
Phys. Rev. B, Vol. 53, Feb. 1996, p. 3912 and in, Acta Physica Polonica A, Vol. 87, 1995, pp. 427-432

28) "Gas source molecular beam epitaxy of β-SiC on Si substrates"
K. Zekentes, N. Becourt, M. Androulidaki, K. Tsagaraki, J. Stoemenos, J.M. Bluet, J. Camassel, J. Pascual
Appl. Surf. Sci. 102, 1996, p. 22

29) "Diffusion of gold in 3C-SiC epitaxially grown on Si: Structure characterisation"
N. Kornilios, G. Constantinidis, K.Zekentes, J. Stoemenos
Mat. Sci. and Eng. B J., B46, 1997, p. 186

30) "High temperature ohmic contacts to 3C-SiC grown on Si substrates by chemical vapor deposition"
G. Constantinidis, N. Kornilios, K.Zekentes, L. Di Cioccio
Mat. Sci. Eng. B J., B46, 1997, p. 176

31) "Topology of twin interface junctions in epitaxial β-SiC"
Ph. Komninou, G. P. Dimitrakopulos, K. Zekentes, V. Papaioannou, B. Pecz, J. Stoemenos, Th. Karakostas
Diam. & Rel. Mat., Vol. 6(10), (1997), p. 1362

32) "IR characterization of carbonization of Si surfaces by Gas source molecular beam epitaxy"
M. Ben el Mekki, J. Pascual, M. Androulidaki, K. Zekentes, J. Camassel, J. Stoemenos
Diam. & Rel. Mat., Vol. 6, (1997), p.1772

33) “Low temperature SiC growth by Metalorganic LPCVD on MBE carbonized Si(100) substrates”
E. Hurtos, J. Rodriguez-Viejo, J. Bassas, M. T. Clavaguera-Mora, K. Zekentes
Mat. Sci. Eng. B J. 61-62 (1999), (Proc. of ECSCRM'1998, Montpellier, France), pp. 549-552

34) “Study of annealing conditions on the formation of ohmic contacts on p+ 4H-SiC layers grown by CVD and LPE”
K. V. Vassilevski, G. Constantinidis, N. Papanicolaou, N. Martin and K. Zekentes
Mat. Sci. Eng. B 61-62 (1999), (Proc. of ECSCRM'1998, Montpellier, France), pp. 296-300

35) “Surfactant-mediated MBE growth of SiC on Si (100) substrates”
K. Zekentes and K. Tsagaraki
Mat. Sci. Eng. B 61-62 (1999), (Proc. of ECSCRM'1998, Montpellier, France), pp. 559-562

36) “Nucleation behavior during the first stages of SiC growth on different substrates”
E. Hurtos, J. Rodriguez-Viejo, M. T. Clavaguera-Mora and K. Zekentes
J. Phys. IV France, Vol. 9 P8, (Proc. of EUROCVD 12), 1999, pp. 1069-1074.

37) " Electrical characteristics and structural properties of ohmic contacts to p-type 4H-SiC epitaxial layers"
K. V. Vassilevski, K. Zekentes, S. Rendakova, I. Nikitina, A. Babanin, A. Andreev
Fizika I Technika Poluprovodnikov-FTP. V33, No 11 (in Russian) and in
Semiconductors, V 33, Issue 11, pp. 1206-1211, (1999).

38) "Fabrication and electrical characterization of 4H-SiC p^+-n-n^+ diodes with low differential resistance"
K. Vassilevski, K. Zekentes, G. Constantinidis, A. Strel'chuk.
Sol. St. Electron. 44 (2000), pp. 1173-1177

39) "Room-temperature GaAs/AlGaAs multiple-quantum-well optical modulators for the 3-5μm atmospheric window"
H. Alause, W. Knap, J. L. Robert, R. Planel, V. Thierry-Mieg, F. H. Julien, K. Zekentes, V. Mosser
Semicond. Sci. Technol. 15 (2000), pp. 724-727

40) "Crystal quality evaluation by electrochemical preferential etching of p-type SiC crystals".
M. Kayambaki, K. Tsagaraki, V. Cimalla, K. Zekentes, and R. Yakimova.
J. Electrochem. Soc 147 (7), (2000), pp. 2744-2748

41) "The temperature dependence of the transition from two-dimensional to three-dimensional growth of Ge on (001)Si studied by RHEED"
V. Cimalla, K. Zekentes.
Appl. Phys. Lett., Vol.77(10), (2000), pp. 1452-1454

42) "Experimental determination of electron drift velocity in 4H-SiC p^+-n-n^+ avalanche diodes"
K. Vassilevski, K. Zekentes, A. Zorenko, L. P. Romanov.
IEEE El. Dev. Lett. Vol. 21(10), (2000), pp. 485-487

43) "Experimental observation of microwave oscillations produced by pulsed silicon carbide IMPATT diode"
K. Vassilevski, A. Zorenko, K. Zekentes
IEE Electronics Lett. Vol. 37, no 7, (2001), pp. 467-467

44) "Improved Al/Si ohmic contacts to p-type 4H-SiC"
R. Kakanakov, L. Kassamakova, K. Zekentes, N. Kuznetsov.
Mat. Sci. Eng. B, Vol 80/1-3, (2001), (Proc. EXMATEC 2000), pp 374-377

45) "Phase formation at rapid thermal annealing of Al/Ti/Ni ohmic contacts on 4H-SiC"
K. Vassilevski, K. Zekentes, G. Constantinidis, I. Nikitina, A. Zorenko,
Mat. Sci. Eng. B, Vol 80/1-3, (2001), (Proc. EXMATEC 2000), pp 370-373

46) "Surface roughness studies on 4H-SiC layers grown by liquid phase epitaxy"
N. Kuznetsov, K. Tsagaraki, D. Bauman, A. Morozov, I. Nikitina, V. Ivantsov, K. Zekentes.
Mat. Sci. Eng. B, Vol 80/1-3, (2001), (Proc. EXMATEC 2000), pp 345-347

47) "Control of morphological transitions during heteroepitaxial island growth by reflection high energy electron diffraction"
V. Cimalla, K. Zekentes, N. Vouroutzis
Mat. Sci. Eng. B, Vol.88, (2002), pp. 186-190

48) "High temperature characteristics of Ti/Al and Cr/Al ohmic contacts to n-type GaN"
N. Papanicolaou, K. Zekentes
Sol. St. Electron., Vol. 46 (11), (2002), pp. 1975-1981

49) "Study of the reactive ion etching of 6H-SiC and 4H-SiC in SF_6/Ar plasmas by optical emission spectroscopy and laser interferometry"
N. Camara, K. Zekentes
Sol. St. Electron., Vol. 46 (11), (2002), pp. 1959-1963 and,
"Use of Laser Interferometry and Optical Emission Spectroscopy for Monitoring the Reactive Ion Etching of 6H - and 4H-SiC"
N. Camara, G. Constantinidis and K. Zekentes
Mat. Sci. For. 433-436 (2003) (Proc. ECSCRM2002, September 2002, Linköping, Sweden), pp. 693-696

50) "Linear alignment of SiC dots on silicon substrates"
V. Cimalla, J. Pezoldt, Th. Stauden, Ch. Förster, and O. Ambacher, A. A. Schmidt, K. Zekentes

J. Vac. Sci. Technol. B. Letters, B22 (2004), L20-L23 and in,
Phys. Stat. Sol. (c) Vol. 1, Issue 2 (Feb. 2004), pp. 337-340

51) "Self organized SiC nanostructures on silicon"
V. Cimalla, A. A. Schmidt, C. Förster, K. Zekentes, O. Ambacher, J. Pezoldt
Superlattices and Microstructures, Vol 36/1-3(Proc. E-MRS'04, May 2004, Strasbourg, France) 2004, pp 345-351.

52) "Forward-bias degradation in 4H-SiC p^+nn^+ diodes: Influence of the mesa etching"
N. Camara, A. Thuaire, E. Bano, K. Zekentes
Phys. St. Sol. (a) 202 (4) (2005) (Proc. EXMATEC'04, June 2004, Montpellier, France), pp. 660-664 and in,
Mat. Sci. Forum. 483-485 (2005) (Proc. of ECSCRM'04, Sept. 2004, Bologne, Italy), pp. 773-776

53) "Microwave switches, based on 4H-SiC p-i-n diodes"
Bludov A.V., Boltovets N.S., Vassilevskii K.V., Zorenko A.V., Zekentes K., Krivutsa V.A., Kritskaya T.V., Lebedev A.A.
Techn. Phys. Letters, Vol. 30, No 2, (2004), p.123–125

54) "Silicon carbide TUNNETT diodes"
V.V.Buniatyan, V.M.Aroutiounian, K.Zekentes, N.Camara, P.Soukiassian
Sol. St. Electron. Vol. 48 (2004), pp. 1569 –1577

55) "Microwave p-i-n diodes and switches based on 4H-SiC"
N. Camara, K. Zekentes, L. P. Romanov, A. V. Kirillov, M. S. Boltovets, K. V. Vassilevski and G. Haddad
IEEE El. Dev. Lett. Vol. 27(2), (2006), pp. 108-110

56) "Microwave characteristics of hetero-junction impatt diodes based on SiC"
V.V. Buniatyan, V.M. Aroutiounian, P.G. Soukiassian, K. Zekentes and V. V. Buniatyan
J. Phys. IV France **132** (2006) (Proc of ICFSI-10, July 2005, Aix-en Provence, France) 355–357

57) "Experimental investigation of noise in 4H-SiC p(+)-n-n(+) junctions"
N. Arpatzanis, D. H. Tassis, C. A. Dimitriadis, K. Zekentes and N. Camara*
Semicond. Sci. Tech. 21(5), (2006), pp. 591-593

58) "Electrical and low frequency noise properties of 4H-SiC p(+)-n-n(+) junction diodes"
Arpatzanis N, Tsormpatzoglou A, Dimitriadis C., Zekentes K, Camara N., Godlewski M.
Phys. St. Sol. A Vol. 203(10) (2006) pp. 2551-2557

59) "Laser annealing of Al implanted silicon carbide: Structural and optical characterization"
C. Boutopoulos, P. Terzis, I. Zergioti, A.G. Kontos, K. Zekentes, K. Giannakopoulos, Y.S. Raptis
Applied Surface Science 253 (2007), (Proc. E-MRS-H Symposium, 2006), 7912–7916.

60) "Theoretical comparison of 3C-SiC and Si nanowire FETs in ballistic and diffusive regimes"
K. Rogdakis, M. Bescond, E. Bano, K. Zekentes
Nanotechnology 18 (2007) 475715 and in,
Mat. Sci. Forum. 600-603 (2009) (Proc. of ICSCRM'07, Oct. 2007, Otsu, Japan) pp.579-582

61) "Photoluminescence and optically detected magnetic resonance investigations of wurtzite phase 4H-SiC"
V. Yu. Ivanov, M. Godlewski, E. N. Kalabukhova, C. A. Dimitriadis, K. Zekentes
Optical Materials 30 (2008) (Proc. Int. Workshop Adv. Spectr. & Opt. Mat., June 2006, Poland) pp. 746-748

62) "4H-SiC p-i-n diodes grown by sublimation epitaxy in vacuum (SEV) and their application as microwave diodes"
N Camara, K Zekentes, V V Zelenin, P L Abramov, A V Kirillov, L P Romanov, N S Boltovets, V A Krivutsa, A Thuaire, E Bano, E Tsoi and A A Lebedev
Semicond. Sci. Technol. 23 (2008) 025016

63) "Microwave modulators based on 4H-SiC p-i-n diodes"
K. Zekentes, N. Camara, V. V. Basanets, M. S. Boltovets, V. A. Krivutsa, V. O. Orechovskij, V. I. Simonchuk A. V. Zorenko, and E. Bano
IEEE Trans. Microwave Theory & Techniques, 56 (2008) pp. 803-808

64) "On application of electrochemical capacitance-voltage profiling technique for n-type SiC"
M. Mynbaeva, M. Kayambaki, K. Mynbaev, K. Zekentes

Semicond. Sci. Technol. 23 (2008) 075039

65) "3C-Silicon Carbide nanowire FET: An experimental and theoretical Approach"
K. Rogdakis, S. Y. Lee, M. Bescond, S. K. Lee, E. Bano and K. Zekentes
IEEE Trans. Electron Dev., 55 (2008) pp. 1970-1976

66) "Fabrication of Ion-implanted Si Nanowire p-FETs"
S. Y. Lee, C.O. Jang, D.J. Kim, J.H. Hyung, K. Rogdakis, E. Bano, K. Zekentes, S. K. Lee
J. Phys. Chem. C, 112 (2008) pp.13287-13291

67) "Cr/4H-SiC Schottky contacts investigated by electrical and photoelectron spectroscopy techniques."
J. Dontas, H. Koliakoudakis, S. Karakalos, M. Kayambaki, S. Ladas, G. Konstantinidis, K. Zekentes, S. Kennou
Phys. Stat. Sol. A, 205(11), (2008) (Proc. of MMN'07, Sept. 2007, Athens, Greece) pp. 2536-2540

68) "Theoretical and experimental operating wavelength of GaAs/$Al_{0.25}Ga_{0.75}As$ IR photodetectors"
A. Almaggoussi, A. Abounadi, H. Akabli, K. Zekentes, and M. Androulidaki
Eur. Phys. J. Appl. Phys. **45**, (2009), p. 20301

69) "Si nanowire p-FET with asymmetric source_drain I_V characteristics"
S. K. Lee, S.Y. Lee, K. Rogdakis, C.O. Jang , D.J. Kim, E. Bano, K. Zekentes
Solid State Communications 149 (2009) 461_463

70) "Phase composition and electrical characteristics of nickel silicide Schottky contacts formed on 4H–SiC"
I Nikitina, K Vassilevski, A Horsfall, N Wright, A G O'Neill, S K Ray, K Zekentes and C M Johnson
Semicond. Sci. Technol. **24** (2009) p. 055006

71) "Phonon- and surface-roughness-limited mobility of gate-all-around 3C-SiC and Si nanowire FETs"
K Rogdakis, S Poli, E Bano, K Zekentes and M G Pala
Nanotechnology **20** (2009) p. 295202

72) "SiC nanowires: material and devices"
K. Zekentes, K. Rogdakis
J. Phys. D: Appl. Phys. 44 (2011) 133001 (Invited Topical Review) DOI : 10.1088/0022-3727/44/13/133001

73) "Rectifying source and drain contacts for effective carrier transport modulation of extremely doped SiC nanowire FETs"
K. Rogdakis, E. Bano, L. Montes, M. Bechelany, D, Cornu and K. Zekentes
IEEE Trans. on Nanotechnology, **10**(5) (2011) pp. 980-984 DOI: 10.1109/TNANO.2010.2091147 and in Materials Science Forum Vols. 679-680 (2011) (Proc. of ECSCRM'11, Sept. 2011, Oslo, Norway) pp 613-616

74) "TCAD models of the temperature and doping dependence of the bandgap and low field carrier mobility in 4H-SiC"
D. Stefanakis, K. Zekentes
Microelectron. Eng. Vol. 116, (2014), Pages 65–71 DOI: 10.1016/j.mee.2013.10.002

75) "Direct growth of thick AlN layers on nanopatterned Si substrates by cantilever epitaxy", I. Demir, Y. Robin, R. McCintock, S. Elagoz, K. Zekentes and M. Razeghi
Phys. Status Solidi A 214, No. 4, 1600363 (2017) / DOI 10.1002/pssa.201600363

76) " Channel width effect on the operation of 4H-SiC vertical JFETs"
K. Vamvoukakis, D. Stefanakis, A. Stavrinidis, K. Vassilevski, G. Konstantinidis, M. Kayambaki, K. Zekentes
Phys. Status Solidi A 214, No. 4, 1600452 (2017) / DOI 10.1002/pssa.201600452

77) "Comparison of Impact Ionization Models for 4H-SiC Along the <0001> Direction, Through Breakdown Voltage Simulations at Room Temperature"
D. Stefanakis, N. Makris, K. Zekentes, D. Tassis
IEEE Trans. Electron Devices, 68(5) pp. 2582 - 2586 (2021), Digital Object Identifier:10.1109/TED.2021.3066143

78) "Progress in SiC nanowire field-effect-transistors for integrated circuits and sensing applications"
K. Zekentes, J. Choi, V. Stambouli, E. Bano, O. Karker, K. Rogdakis,
Microelectronic Engineering 255, 111704 (2022), Digital Object Identifier: 10.1016/j.mee.2021.111704

79) "Amorphous SiC Thin Films Deposited by Plasma-Enhanced Chemical Vapor Deposition for Passivation in Biomedical Devices"
S. Greenhorn, E. Bano, V. Stambouli, K. Zekentes.
Materials, 17(5), (2024), 1135. doi: 10.3390/ma17051135. PMID: 38473606; PMCID: PMC10934948

80) "Temperature Influence on the Deposition of Nitrogen-Doped Silicon Carbide Polycrystalline Films"
M. Gavalas, S. Greenhorn, F. Mercier, K. Zekentes.
Coatings, 15, 106, (2025), https://doi.org/10.3390/ coatings15010106

81) "Progress in Polycrystalline SiC Growth by Low Pressure Chemical Vapor Deposition and Material Characterization"
M. Gavalas, Y. Gallou, D. Chaussende, E. Blanquet, F. Mercier, K. Zekentes.
Micromachines, 16, 276, (2025), https:// doi.org/10.3390/mi16030276

82) "Multi-technique Study of Composition, Structure, and Bonding in PECVD Amorphous Silicon Carbide Films"
S. Greenhorn, E. Bano, F. Pierre, N. Gauthier, M. Weber, A. Lagoyannis, E. Taimpiri, K. Zekentes, B. Pelissier, V. Stambouli,
Journal of Materials Research and Technology, Volume 192, 109444, (2025), https://doi.org/10.1016/j.mssp.2025.109444

83) "Improving SiC surface properties by hyaluronic acid hydrogel deposition for neural probe applications."
S. Greenhorn, R. Auzely, C. Verdier, M. Weber, I. Jeacomine, K. Zekentes, E. Bano and V. Stambouli.
Surface and Coatings Technology, Vol. 512, 132299, (2025), ISSN 0257-8972, 2 https://doi.org/10.1016/j.surfcoat.2025.132299.

84) "Optimizing chemical resistance of PECVD amorphous silicon carbide thin films"
S. Greenhorn, V. Stambouli, E. Bano, A. Uvarov and, K. Zekentes.
J. Non-Crystalline Solids, Vol. 666, 123723, (2025). https://doi.org/10.1016/j.jnoncrysol.2025.123723

85) "Fabrication of planar nanostructured SiC microelectrode arrays for long-lifetime neural interfaces"
F. Iacovella, G. Pound-Lana, L. Labbe, S. Labau, C. Petit-Etienne, A. Uvarov, S. Greenhorn, K. Zekentes, E. Bano, C. Gourgon and J. Boussey, Micro and Nano Engineering, Vol. 32, 100391, (2026), ISSN 2590-0072, https://doi.org/10.1016/j.mne.2026.100391.

Submitted/to be submitted publications.

86) S. Greenhorn, V. Stambouli, E. Bano, K. Zekentes. "Electrical isolation by employing buffer pn diode structures." To be submitted to IEEE Transactions on Electron Devices.

87) O. Karker, V. Stambouli, E. Bano, S. Greenhorn, K. Tsagaraki, K. Zekentes, "High-performance all-SiC ion sensitive junction field effect transistor (SiC-ISJFET) for pH sensing" To be submitted to Journal of The Electrochemical Society

88) M. Androulidaki, K. Papachristopoulou, A. Stavrinidis, G. Konstantinidis, J. Boussey, K. Zekentes, and N. A. Vainos, "Free-space photonic and plasmonic silicon carbide pillar nanostructures" To be submitted to Journal of Applied Physics

Publications in peer-reviewed conference proceedings included in ISI/SCOPUS/GOOGLE SCHOLAR Citation Indexes

89) "Confined States in InGaAs/InAlAs single quantum wells studied by room temperature phototransmitance and electrotransmittance at high electirc fields."
A. Dimoulas, A. Georgakilas, G. Halkias, K. Zekentes, K. Michelakis, A. Christou.
Inst. Phys. Conf. Ser. No 120, Ch. 5, 1992, pp. 263-266 (Proceedings of 18th Int. Conf. on "GaAs and Related Compounds" Seattle, USA, 1991)

90) "Electrochemical C-V profiling of p-type 6H-SiC"
M. Kayambaki, K. Zekentes
Mat. Sci. For. Vols. 338-342 (2000) (Proc. of ICSCRM'99, Oct. 1999, Raleigh,USA), pp. 1061-1064.

91) “Structural and morphological characterization of Al/Ti-based ohmic contacts on p-type 4H-SiC annealed under various conditions.”
K. V. Vassilevski, K. Zekentes, G. Constantinidis, N. Papanicolaou, I. P. Nikitina, A. I. Babanin,
Mat. Sci. For. Vols. 338-342 (2000) (Proc. of ICSCRM’99, Oct. 1999, Raleigh,USA), pp. 1017-1020.

92) “Electrochemical characterization of p-type hexagonal SiC”
M. Kayambaki, K. Zekentes, K. Tsagaraki, E. Pernot and R. Yakimova
Mat. Sci. For. Vols. 353-356 (2001) (Proc. ECSCRM2000, September 2000, Erlangen, Germany), pp. 619-622.

93) “Silicon carbide Zener diodes”
K. V. Vassilevski, K. Zekentes, E. Bogdanova, M. Lagadas and A. Zorenko
Mat. Sci. For. Vols. 353-356 (2001) (Proc. ECSCRM2000, September 2000, Erlangen, Germany), pp.735-738.

94) “Origin of the excellent thermal stability of Al/Si-based ohmic contacts to p-type 4H-SiC”
L. Kassamakova, R. Kakanakov, , I. Kassamakov, K. Zekentes, K. Tsagaraki and G. Atanasova.
Mat. Sci. For. Vols. 353-356 (2001) (Proc. ECSCRM2000, September 2000, Erlangen, Germany), pp.251-254.

95) “In situ RHEED studies on the influence of Ge on the early stages of SiC on Si (111) and (100) surfaces”
V. Cimalla, K. Zekentes, K. Tsagaraki, Th. Stauden, F. Scharmann and J. Pezoldt.
Mat. Sci. For. Vols. 353-356 (2001) (Proc. ECSCRM2000, September 2000, Erlangen, Germany), pp. 187- 190.

96) "Reliable ohmic contacts to LPE p-type 4H-SiC for high power p-n diode"
R. Kakanakov, L. Kassamakova, N. Hristeva, G. Lepoeva, N. Kuznetsov, K. Zekentes
Mat. Sci. For. Vols. 389-393 (2002) (Proc. of ICSCRM’01, Oct. 2001, Tsukuba, Japan), pp. 917-920.

97) "Growth and characterization of three-dimensional SiC nanostructures on Si"
V. Cimalla, K. Zekentes
Mat. Sci. For. Vols. 389-393 (2002) (Proc. of ICSCRM’01, Oct. 2001, Tsukuba, Japan), pp. 747-750

98) "Photon emission analysis of defect-free 4H-SiC p-n diodes in avalanche regime
C. Banc, E. Bano, T. Ouisse, K. Vassilevski and K. Zekentes
Mat. Sci. For. Vols. 389-393 (2002) (Proc. of ICSCRM’01, Oct. 2001, Tsukuba, Japan), pp. 1293-1296

99) “4*H*-SiC IMPATT Diode Fabrication and Testing”
K.V. Vassilevski, A.V. Zorenko, K. Zekentes, K. Tsagaraki, E. Bano, C. Banc, A.A. Lebedev
Mat. Sci. For. Vols. 389-393 (2002) (Proc. of ICSCRM’01, Oct. 2001, Tsukuba, Japan), pp. 1353-1358

100) "4H-SiC pn diode grown by LPE method for high power applications"
N. Kuznetsov, D. Bauman, A. Gavrilin, L. Kassamakova, R. Kakanakov, G. Sarov, T. Cholakova, K. Zekentes, V. Dmitriev
Mat. Sci. For. 433-436 (2003) (Proc. ECSCRM2002, September 2002, Linköping, Sweden), pp. 867-870

101) "Reliability of 4H-SiC p-n diodes on LPE grown layers"
G.Sarov, R.Kakanakov, T.Cholakova, L.Kassamakova, N.Hristeva, G.Lepoeva, P.Philipova, N.Kuznetsov, K.Zekentes
Mat. Sci. For. 433-436 (2003) (Proc. ECSCRM2002, September 2002, Linköping, Sweden), pp. 929-932

102) "Pd-Based Ohmic Contacts to LPE 4H-SiC with Improved Thermal Stability"
L. Kassamakova-Kolaklieva, R. Kakanakov, V. Cimalla, N. Hristeva, G. Lepoeva, N. Kuznetsov, K. Zekentes
Mat. Sci. For. 433-436 (2003) (Proc. ECSCRM2002, September 2002, Linköping, Sweden), pp. 713-716

103) "Thermally Stable Low Resistivity Ohmic Contacts for High Power and High Temperature SiC Device Applications"
R. Kakanakov, L. Kassamakova-Kolaklieva, N. Hristeva, G. Lepoeva, K. Zekentes
Proc. 23rd Inter. Conf. Microelectronics (MIEL 2002), May 2002, Published by Electron Device Society (IEEE Cat. 02TH8595), pp. 205-208

104) "Current transport mechanisms in 4H-SiC pn diodes"
N.Camara, E.Bano, K.Zekentes
Mat. Sci. Forum. 457-460 (2004) (Proc. of ICSCRM’03, Oct. 2003, Lyon, France), pp. 1017-1020.

105) "Electrochemical C-V profiling of n-type 4H-SiC"

K.Zekentes, M. Kayambaki, S. Mousset
Mat. Sci. Forum. 457-460 (2004) (Proc. of ICSCRM'03, Oct. 2003, Lyon, France), pp. 681-684

106) "Low voltage silicon carbide Zener diode"
K.V. Vassilevski, K. Zekentes, A.B. Horsfall, C. M. Johnson, N. G. Wright
Mat. Sci. Forum. 457-460 (2004) (Proc. of ICSCRM'03, Oct. 2003, Lyon, France), pp. 1029-1032

107) "Simulation of switching 4H-SiC p-i-n diodes and microwave modulators on their basis"
Bludov A.V., Boltovets M.S., Vassilevski K.V., Zorenko A.V., Zekentes K., Lebedev A.A., Krivutsa V.A.
Mat. Sci. Forum. 457-460 (2004) (Proc. of ICSCRM'03, Oct. 2003, Lyon, France), pp. 1089-1092

108) "Theoretical investigations of the microwave characteristics of TUNNET diodes made of silicon carbide"
V. V. Buniatyan, V. M. Aroutiounian, K. Zekentes, N. Camara, P. Soukiassian
Mat. Sci. Forum. 457-460 (2004) (Proc. of ICSCRM'03, Oct. 2003, Lyon, France), pp. 977-980

109) "Investigation of microwave switching 4H-SiC p-i-n diodes in the 20÷500°C temperature range"
Boltovets M.S., Basanets V.V., N. Camara, Krivutsa V.A., Zekentes K.
Mat. Sci. Forum. 483-485 (2005) (Proc. of ECSCRM'04, Sept. 2004, Bologne, Italy), pp. 997-1000

110) "Photoemission of 4H SiC pin diodes epitaxied by the sublimation method"
N. Camara, K. Zekentes, E. Bano, A. Thuaire, A. Lebedev
Mat. Sci. Forum. 527-529 (2006) (Proc. of ICSCRM'05, Oct. 2005, Pittsburgh, USA), pp. 391-394.

111) "Theoretical Study of An Effective Field Plate Termination for SiC Devices Based on High-k Dielectrics"
M. Brezeanu**,** M. Badila, G. Brezeanu, F. Udrea, C. Boianceanu, G.A.J. Amaratunga, K. Zekentes
Mat. Sci. Forum. 527-529 (2006) (Proc. of ICSCRM'05, Oct. 2005, Pittsburgh, USA), pp. 1087-1090.

112) "Via Hole Formation in Silicon Carbide by Laser Micromachining"
K. Zekentes, I. Zergioti, A. Klini, G. Constantinidis
Mat. Sci. Forum. 527-529 (2006) (Proc. of ICSCRM'05, Oct. 2005, Pittsburgh, USA), pp. 1119-1121.

113) "About the nature of recombination current in 4H-SiC pn structures"
A. M. Strelchuk, A. V. Mashichev, A. A. Lebedev, A. N. Volkova and K. Zekentes
Mat. Sci. Forum. 527-529 (2006) (Proc. of ICSCRM'05, Oct. 2005, Pittsburgh, USA), pp. 1343-1346

114) "Investigation of packaged high-voltage 4H SiC pin diodes in the 20-700 °C temperature range"
Boltovets M.S., Basanets V.V. , Camara N., Krivutsa V.A., Zekentes K.
Mat. Sci. Forum. 527-529 (2006) (Proc. of ICSCRM'05, Oct. 2005, Pittsburgh, USA), pp. 1375-1378.

115) "CM-wave modulator with high-voltage 4H SiC pin diodes"
M.S. Boltovets, V.V. Basanets, A.V. Zorenko, V.A. Krivutsa, N. Camara, V.O. Orechovskij, V.I. Simonchuk and K. Zekentes
Mat. Sci. Forum. 527-529 (2006) (Proc. of ICSCRM'05, Oct. 2005, Pittsburgh, USA), pp. 1379-1382.

116) "Microwave p-i-n Diodes and Switches Based on 4H-SiC"
K. Zekentes, N. Camara, L.P. Romanov, A.V. Kirillov, M.S. Boltovets
Mat. Sci. Forum. 556-557 (2007) (Proc. of ECSCRM'06, Sept. 2006, Newcastle, UK) pp. 999-1002

117) "Microwave p-i-n diodes fabricated on 4H-SiC material grown by sublimation epitaxy in vacuum"
N. Camara, L.P. Romanov, A.V. Kirillov, M.S. Boltovets, A.A. Lebedev, V.V. Zelenin, M. Kayambaki, K. Zekentes
Mat. Sci. Forum. 556-557 (2007) (Proc. of ECSCRM'06, Sept. 2006, Newcastle, UK) pp. 933-936.

118) "Coupling between the Raman Spectroscopy and Photoemission Microscopy Techniques: Investigation of Defects in Biased 4H-SiC pin Diodes"
A. Thuaire**,** M. Mermoux, E. Bano**,** A. Crisci, F. Baillet and K. Zekentes
Mat. Sci. Forum. 556-557 (2007) (Proc. of ECSCRM'06, Sept. 2006, Newcastle, UK) pp. 909-912.

119) "Comparison between Schottky diodes with oxide ramp termination on silicon carbide and diamond"
G. Brezeanu, M. Brezeanu, F. Udrea, G. Amaratunga, C. Boianceanu, M. Badila, K. Zekentes
Mat. Sci. Forum. 556-557 (2007) (Proc. of ECSCRM'06, Sept. 2006, Newcastle, UK) pp. 865-868.

120) "Microwave switches and modulators based on 4H-SiC p-i-n diodes"
K. Zekentes, V. V.Basanets, M. S. Boltovets, V. A. Kryvutsa, V. O. Orechovskij, V. I. Simonchuk, A. V. Zorenko, L. P. Romanov, A. V. Kirillov, E. Bano, N Camara
Mat. Sci. Forum. 600-603 (2009) (Proc. of ICSCRM'07, Oct. 2007, Otsu, Japan) pp.1019-1022

121) "Effect of Source and Drain Contacts Schotky Barrier on 3C-SiC Nanowire"
K. Rogdakis, S. Y. Lee, D.J. Kim, S. K. Lee, E. Bano and K. Zekentes
Mat. Sci. Forum. 615-617 (2009) (Proc. of ECSCRM'08, Sept. 2008, Barcelona, Spain) pp.235-238

122) "Fabrication and Characterization of Cr-Based Schottky Diode on n-type 4H-SiC"
H. Koliakoudakis, J. Dontas, S. Karakalos, M. Kayambaki, S. Ladas, G. Konstantinidis, S. Kennou and K. Zekentes,
Mat. Sci. Forum. 615-617 (2009) (Proc. of ECSCRM'08, Sept. 2008, Barcelona, Spain) pp.651-654

123) "Field Effect Transistors Based on Catalyst-Free Grown 3C-SiC Nanowires"
K. Rogdakis, E. Bano, L. Montes, M. Bechelany, D. Cornu and K. Zekentes
Mat. Sci. Forum. 645-648 (2010) (Proc. of ICSCRM'09, Oct. 2009, Erlangen, Germany) pp. 1235-1238

124) "Growth of SiC Nanowires through Si Nanowires Carburization"
M. Ollivier, A. Mantoux , E. Bano, K. Rogdakis, K. Zekentes, T. Baron and L. Latu-Romain
Mat. Sci. Forum. *679-680* (2011) (Proc. of ECSCRM'10, Sept 2010, Norway) pp. 505-508

125) "Material limitations for the development of high performance SiC NWFETs"
K. Zekentes, K. Rogdakis and E. Bano
Mat. Sci. Forum. *711*(2012) (Proc. of HETEROSiC'11, June 2011, France) pp.70-74

126) " Fabrication issues of 4H-SiC Static Induction Transistors"
A. Stavrinidis**,** G. Konstantinidis**,** M. Kayambaki**,** F. Cayrel**,** D. Alquier**,** Z. Gao and K. Zekentes
Mat. Sci. Forum. *717-720* (2012) (Proc. of ICSCRM'11, Sept 2011, Cleveland, USA). pp. 1049-1052

127) " Room temperature physical characterization of implanted 4H- and 6H-SiC"
K. Zekentes, K. Tsagaraki, M. Androulidaki, M. Kayambaki, A. Stavrinidis, H. Peyre and J. Camassel
Mat. Sci. Forum. *717-720* (2012) (Proc. of ICSCRM'11, Sept 2011, Cleveland, USA) pp 589-592

128) "The formation of new periodicities after N-implantation in 4H- and 6H- SiC samples"
K. Zekentes, K. Tsagaraki, A. Breza and N. Frangis
Mat. Sci. Forum. *740-742* (2013*)* (Proc. of ECSCRM'12, Sept 2011, St. Petersburg, Russia) pp 447-450

129) "4H-SiC VJFETs with self-aligned contacts"
K. Zekentes**,** A. Stavrinidis, G. Konstantinidis, M. Kayambaki, K. Vamvoukakis, E. Vassakis, K. Vassilevski, Alton B. Horsfall, N. G. Wright, P. Brosselard, S. Niu, M. Lazar, D. Planson, D. Tournier, N. Camara
Mat. Sci. Forum. *821-823* (2015) (Proc. of ECSCRM'14, Sept 2014, Grenoble, France) pp793-796

130) "Si NWs conversion to Si-SiC core-shell NWs by MBE"
F. Lloret**,** D. Araujo, M.P. Villar, L. Liu and K. Zekentes
Mat. Sci. Forum. *821-823* (2015) (Proc. of ECSCRM'14, Sept 2014, Grenoble, France) pp. 965-969

131) "Modelling of 4H-SiC VJFETs with self-aligned contacts"
K. Zekentes**,** K. Vassilevski, A. Stavrinidis, G. Konstantinidis, M. Kayambaki, K. Vamvoukakis, E. Vassakis, H. Peyre, N. Makris, M. Bucher, P. Schmid, D. Stefanakis, D. Tassis
Mat. Sci. Forum. *858* (2016) (Proc. of ICSCRM'15, Oct. 2015, Catania, Italy) pp913-916

132) "Comparison of bottom-up and top-down 3C-SiC NWFETs"
J. Choi, E. Bano, A. Henry, G. Attolini and K. Zekentes
Mat. Sci. Forum. *858* (2016) (Proc. of ICSCRM'15, Oct. 2015, Catania, Italy) pp1001-1005

133) "Electrical transport properties of highly aluminum doped p-type 4H-SiC"
S. Contreras, L. Konczewicz, P. Kwasnicki, R. Arvinte, H. Peyre, T. Chassagne, M. Zielinski, M. Kayambaki, S. Juillaguet, K. Zekentes
Mat. Sci. Forum. *858* (2016) (Proc. of ICSCRM'15, Oct. 2015, Catania, Italy) pp249-252

134) "Salicide-Like Process for the Formation of Gate and Source Contacts in 4H-SiC TSI-VJFET"

A. Stavrinidis, G. Konstantinidis, K. Vamvoukakis, K.Zekentes
Mat. Sci. Forum. *897* (2017) (Proc. of ECSCRM'16, Sept. 2016, Chalkidiki, Greece) pp407-410

135) "Capacitances in 4H-SiC TSI-VJFETs"
M. Kayambaki, K. Vamvoukakis, A. Stavrinidis, G. Konstantinidis, N. Kornilios, K. Zekentes
Mat. Sci. Forum. *897* (2017) (Proc. of ECSCRM'16, Sept. 2016, Chalkidiki, Greece) pp591-594

136) "On the optimum determination and use of SiC VJFET Threshold Voltage"
M. Kayambaki, N. Makris, A. Stavrinidis, G. Konstantinidis, K. Zekentes
Mat. Sci. Forum. *924* (2018) (Proc. of ICSCRM'17, Sept. 2017, Washington DC, USA) pp. 657-660

137) "Cross-section doping topography of 4H-SiC VJFETs by various techniques"
K. Tsagaraki, M. Nafouti, H. Peyré, K. Vamvoukakis, N. Makris, M. Kayambaki, A. Stavrinidis, G. Konstantinidis, M. Panagopoulou, D. Alquier, K. Zekentes
Mat. Sci. Forum. *924* (2018) (Proc. of ICSCRM'17, Sept. 2017, Washington DC, USA) pp. 653-656

138) "A Continuous Semi-Empirical VJFET Capacitance Model from Sub to above Threshold Regime"
N. Makris, M. Kayambaki, A. Stavrinidis, G. Konstantinidis, K. Zekentes
Mat. Sci. Forum. *924* (2018) (Proc. of ICSCRM'17, Sept. 2017, Washington DC, USA) pp. 649-652

139) "4H-SiC p-type doping determination from secondary electron imaging"
M. Kayambaki, N. Makris, K. Tsagaraki, H. Peyré, A. Stavrinidis, G. Konstantinidis, K. Zekentes, Mat. Sci. Forum. Vol. 963, (2019) (Proc. of ECSCRM'18, Sept. 2018, Birmingham, GB) pp 328-331

140) "Compact modeling of Silicon, Silicon Carbide, and Gallium Nitride Junction FETs at high temperature"
N. Makris, K. Zekentes, M. Bucher, Mat. Sci. Forum. Vol. 963, (2019) (Proc. of ECSCRM'18, Sept. 2018, Birmingham, GB) pp 683-687

141) "Modelling and development of 4H-SiC nanowire/nanoribbon biosensing FET structures"
O. Karker, K. Zekentes, A. Bouchard, I. Gélard, X. Mescot, V. Stambouli, E. Bano, Mat. Sci. Forum. Vol. 1062, (2022) (Proc. of ECSCRM'21, Oct. 2021, Tours France), pp. 608-612

142) "Fabrication of an Open Gate-4H-SiC Junction Field Effect Transistor for Bio-Related and Chemical Sensing Applications"
O. Karker, K. Zekentes, N. Makris, V. Stambouli, E. Bano, Key Engineering Materials (Volume 946), (2023) (Proc. of ICSCRM'22, Oct. 2022, Davos, Switzerland), pp. 111-118, https://doi.org/10.4028/p-23d7ab

143) "Optimizing PECVD a-SiC:H Films for Neural Interface Passivation"
S. Greenhorn, K. Zekentes, E. Bano, V. Stambouli, A. Uvarov, Key Engineering Materials (Volume 946), (2023) (Proc. of ICSCRM'22, Oct. 2022, Davos, Switzerland), pp. 83-88. https://doi.org/10.4028/p-762f40

144) "Comparing 4H-SiC NPN Buffer Layers by Epitaxial Growth and Implantation for Neural Interface Isolation,"
S. Greenhorn, E. Bano, V. Stambouli, and K. Zekentes. Solid State Phenomena, vol. 358, (Proc. of ICSCRM'22, Oct. 2023, Sorrento, Italy) pp. 31-35. Aug. 2024. 10.4028/p-jqCtr5.

Publications in peer reviewed journals not included in ISI/SCOPUS Citation Indexes

145) "On Silicon Carbide Thermal Oxidation"
A. Benfdila and K. Zekentes
African Physical Review (2010) **4**:0005, pp. 25-30

Publications in proceedings of International Conferences

146) "Observation of metastable effects in pseudomorphic heterostructures InGaAs/InAlAs"
L. Konczewicz, J.M. Mercy, M. Baj, J.L. Robert, K. Zekentes, A. Georgakilas, G. Halkias, A. Christou.
High Pressure Res., Vol.9,1992, pp. 97-100 (Proc. XXIX Annual Sci. meeting EHPRG, Thessaloniki, 1991)

147) "Parity allowed and forbidden transitions in $In_xGa_{1-x}As/In_{0.52}Al_{0.48}As$ single quantum wells by room temperature modulation spectroscopy"
A. Dimoulas, J. Leng, K.P. Giapis, K. Zekentes, G. Halkias, A. Christou.
Proceedings of 21 Int. Conf. Phys. of Semicond. (ICPS 21), 1992, Beijing, China, pp. 1024-1027

148) "Evidence for the 3-Al configuration of the DX center in the GaAlAs alloy"
S. Contreras, V. Mosser, H. Gazo, L. Konczewicz, L.L. Robert, K. Zekentes
Proceedings of 21 Int. Conf. Phys. of Semicond. (ICPS 21), 1992, Beijing, China, pp. 1573-157

149) "Fractional dimensionality of weakly localized electrons in GaAs-$Ga_{0.7}Al_{0.3}As$ heterostructures"
S. Ravanomanjato, K.A. Zekentes, J.L. Robert, W. Zawadzki
Proceedings of 21 Int. Conf. Phys. of Semicond. (ICPS 21), 1992, Beijing, China, pp. 1194-1197

150) "Electrical and optical characterization of InAlAs/InGaAs/InAlAs single quantum well structures"
J.M. Lopez-Villegas, P. Roura, J. Bosch, J.R. Morante, A. Georgakilas, K. Zekentes
Proceedings of "Sixteen European Workshop on Compound Semiconductor Device and Integrated Circuits (WOCSDICE 92)", Spain, 1992

151) "Optical studies of lattice-matched and strained SQW of GaInAs/AlInAs"
Tabata, T. Benyattou, S. Moneger, Y. Baltagi, G. Guillot, A. Georgakilas, K. Zekentes, G. Halkias.
Proceedings of SPIE's Symposium on "Compound Semiconductor Physics and Devices", Conference 1678, March 1992, New Jersey, USA

152) "Optical characterization of lattice-matched and strained GaInAs/AlInAs single quantum wells"
Tabata, T. Benyattou, S. Moneger, J. Grange, G. Guillot, A. Georgakilas, K. Zekentes, G. Halkias.
Proceedings of 4th Inter. Conf. on "InP and Related Materials", April 1992, Newport, USA (Ed. by IEEE/LEOS), pp. 129-132

153) "InGaAs Molecular Beam Epitaxy in InP wells prepared by reactive ion etching"
Georgakilas, K. Zekentes, K. Tsagaraki, P. Lefebvre, J. Allegre, A. Christou
Proceedings of 4th Inter. Conf. on "InP and Related Materials", April 1992, Newport, USA (Ed. by IEEE/LEOS), pp. 101-104

154) "Suppression of the kink effect in InGaAs/InAlAs HEMT's grown by MBE by optimizing the InAlAs buffer layer"
Georgakilas, G. Halkias, K. Zekentes, N. Kornilios, A. Dimoulas, F. Peiro, A. Cornet, A. Christou
Proceedings of 4th Inter. Conf. on "InP and Related Materials", April 1992, Newport, USA (Ed. by IEEE/LEOS), pp. 97-100

155) "Weak antilocalization and spin precession in quantum wells and heterojunctions"
W.Knap, C.Skierbiszewski, G.E. Pikus, E.Litwin-Staszewska, S.V.Iordanskii, F.Kobbi, A. Zduniak, J.L.Robert, V.Mosser, K.Zekentes
Proc. of 22 Int. Conf. Phys. of Semicond. (ICPS 22), Vancouver 1994, Canada, p. 935

156) "Characterization of main electron scattering mechanisms in InGaAs/InAlAs single quantum wells by optical modulation spectroscopy"
Y. Baltagi, C. Bru, T. Benyattou, S. Moneger, A. Georgakilas, K. Zekentes, G. Halkias
Proceedings of SPIE's Symposium on "Physical Concepts and Materials for Novel Optoelectronic Device Applications II", Vol. 1985, May 1993, Trieste, Italy, pp. 433-441.

157) "The MBE technology for selective area embedded InGaAs layers in InP substrates"
Georgakilas, A. Christou, K. Zekentes, K. Tsagaraki, G. Halkias, P. Lefebvre, J. Allegre
Oral presen. in "SPIE' s Internationnal Symposium on Optoelectronic Packaging and Interconnects", Los Angeles, USA, 1993

158) "Study of main electron scattering mechanisms in InGaAs/InAlAs single quantum wells by photoreflectance measurements versus temperature"
Y. Baltagi, C. Bru, T. Benyattou, S. Moneger, A. Georgakilas, K. Zekentes, G. Halkias
Proceedings of 5th Inter. Conf. on "InP and Related Materials", April 1993, Paris, France (Ed. by IEEE/LEOS)

159) "Admittance spectroscopy measurements on AlInAs/GaInAs/AlInAs quantum well structures: evidence of a deep level assisted tunneling"
S. Ababou, G. Guillot, S. Clark, G. Halkias, A. Georgakilas, K. Zekentes, D. Stievenard, X. Letartre, M. Lanoo
Proceedings of 5th Inter. Conf. on "InP and Related Materials", April 1993, Paris, France (Ed. by IEEE/LEOS)

160) "Physics of AlGaAs/InGaAs/GaAs heterostructures for high perfomance magnetic sensors"
V. Mosser, S. Contreras, S. Aboulhouda, Ph. Lorenzini, F. Kobbi, J.L Robert, K. Zekentes
Proceedings of "ESSDERC 93" Conference, Sept. 1993, Grenoble, France, pp. 659-662

161) "Characterization of pseudomorphic HEMT structures by modulation spectroscopy"
Dimoulas, K. Zekentes, M. Androulidaki
Presented at MRS Fall Meeting 1993, Boston MA, USA

162) "Structural characterization of the β-SiC/Si interface"
J. Stoemenos, B. Pesz, K. Zekentes, P.B. Barna
Presented at ICEM 13, 1994, Paris, France

163) "Structural characterization of InAlAs/InGaAs layers grown on InP patterned substrates"
F. Peiro, A. Cornet, J. R. Morante, K. Zekentes, A. Georgakilas
Mat. Res. Soc. Symp. Proc. Vol. 340, (1994), p.59

164) "Growth and stress characterization of LPCVD SiC films deposited on bare, carbonized and oxidized Si (100) substrates"
E. Hurtos, J. Rodriguez-Viejo, K. Zekentes, M. T. Clavaguera-Mora
Mat. Res. Soc. Symp. MRS Fall Meeting 1998, Boston MA, USA

165) "Isothermal I-V characteristics of 4H-SiC p-n diodes with low series differential resistivity at avalanche breakdown"
K. Vassilevski, K. Zekentes, A. Zorenko, L. Romanov.
Mat. Res. Soc. Symp. Vol. 622, T1.8.1-T1.8.6, (2000), (Spring MRS meeting, 2000, St. Francisco, USA).

166) "Electrical characterization of 4H-SiC p+-n-n+ avalanche diodes"
K. Vassilevski, K. Zekentes, E. Bogdanova, A. Zorenko
Proceedings of "24th Workshop on Compound Semiconductor Device and Integrated Circuits (WOCSDICE 00)", Greece, 2000, p. VIII-19.

167) "4H-SiC p^+-n-n^+ Zener and IMPATT diodes"
K. Vassilevski, K. Zekentes, M. Lagadas, A, Zorenko
Presented at MMN 2000 Conf., November 20-22, Athens, Greece

168) "4H-SiC p^+-n-n^+ Zener and IMPATT diodes"
K. Vassilevski, K. Zekentes, M. Lagadas, N. Papanicolaou, A. Zorenko, L. Romanov
Proceedings of "25th Workshop on Compound Semiconductor Device and Integrated Circuits (WOCSDICE 00)", Italy, 2001, p. 167.

169) "X-band Silicon Carbide IMPATT Oscillator"
K. Vassilevski, A. V. Zorenko, K. Zekentes
Mat. Res. Soc. Symp. Vol. 622, (2001) (Spring MRS meeting, 2001, St. Francisco, USA), T1.8.1.

170) "Current transport mechanisms in 4H-SiC pin diodes".
N.Camara, E.Bano, K.Zekentes
Proceedings of CAS 2003, Sinaia, Romania, 2003, p.

171) "Current transport mechanisms in 4H-SiC pin diodes".
N. Camara, E. Bano, K. Zekentes
Proceedings of "12th European Workshop on Heterostructure Technology (HETECH 2003)", San Rafael, Spain, October 2003, p. TueB6

172) "Processing Technology of SiC-based microwave diodes"
N. Camara, K. Zekentes
Proceedings of "13th European Workshop on Heterostructure Technology (HETECH 2004)", Heraklion, Greece, October 2004

173) "4H-SiC pin diodes for microwave applications"
K. Zekentes, N. Camara, L.P. Romanov, A. V. Kirillov, M.S. Boltovets, A. Lebedev, K. V. Vassilevski
Proceedings of CAS 2005 (ISBN: 0-7803-9214-0), October 2005, Sinaia, Romania, pp. 17-25.

174) “Microwave p-i-n diodes and switches based on 4H-SiC”
K. Zekentes, N. Camara, G. Konstantinidis, L. P. Romanov, A. V. Kirillov, M. S. Boltovets
Proceedings of 36th European Microwave Conference (ISBN 2-9600551-6-0), September 2006, Manchester, UK, pp. 99-102

175) "Laser annealing of 4H-SiC implanted layers"
P. Terzis, I. Zergioti, K. Zekentes
Proceedings of "15th European Workshop on Heterostructure Technology (HETECH 2006)", Manchester, UK, October 2006

176) "Reverse characteristics behaviour of 4H-SiC pin diodes"
C. Boianceanu, K. Zekentes
Proceedings of "15th European Workshop on Heterostructure Technology (HETECH 2006)", Manchester, UK, October 2006

177) "Termination Optimization for 4H-SiC *P-i-n* Diodes"
C. Boianceanu, K. Zekentes, N. Camara, M. Kayambaki, W. Rouet
Proceedings of CAS 2006 (ISBN: 1-4244-0109-7), October 2006, Sinaia, Romania, pp. 327-330

178) "High speed modulator in Q-band range on 4H-SiC p-i-n diodes"
R. D. Kakanakov, L. P. Kolaklieva, L.P. Romanov, A. V. Kirillov, A. A. Lebedev, M.S. Boltovets, K. Zekentes
Proceedings of 25th International Conference on Microelectronics-MIEL2006, (1-4244-0117-8/06/$20.00 ©2006 IEEE), May 2006, pp. 293-296

179) “High frequency SiC-based PIN diodes”
N. Camara, K. Zekentes, M. Boltovets, V.V. Basanets, V.A. Kryvutsa, V.O. Orechovskij, V.I. Simonchuk, A.V.Zorenko, L.P. Romanov, A.V. Kirillov, E. Bano
Proceedings of "16th European Workshop on Heterostructure Technology (HETECH 2007)", San Rafael, France, September 2007

180) “Successful Electrochemical C-V profiling of n-type 4H-SiC”
K. Zekentes, M. Kayambaki, M. Mynbaeva
Proceedings of "16th European Workshop on Heterostructure Technology (HETECH 2007)", San Rafael, France, September 2007

181) “Fabrication and characterization of Cr-based Schottky diode on n-type 4H-SiC”
C. Koliakoudakis, J. Dontas, S. Karakalos, M. Kayambaki, S. Ladas, G. Konstantinidis, K. Zekentes, S. Kennou
Proceedings of "17th European Workshop on Heterostructure Technology (HETECH 2008)", Venice, Italy, November 2008, p. 129.

182) “Electrical properties of 3C-SiC nanowires”
Konstantinos Rogdakis, Seoung-Yong Lee, Marc Bescond, Dong-Joo Kim, Sang-Kwon Lee, Edwige Bano and Konstantinos Zekentes
Proceedings of "17th European Workshop on Heterostructure Technology (HETECH 2008)", Venice, Italy, November 2008, p. 131.

183) " Backscattering coefficient in gate-all-around 3C-SiC nanowire FETs″
K. Rogdakis, E. Bano, M. Pala, S. Poli and K. Zekentes
Proceedings of IEEE NANO 2009, Genoa, Italy, July 26-30, 2009

184) “Application of Physical Characterization Methods during fabrication of 4H-SiC Static Induction Transistors”
K. Zekentes, M. Androulidaki, K. Tsagaraki, M. Kayambaki, A. Stavrinidis, G. Konstantinidis
Proceedings of "19th European Workshop on Heterostructure Technology (HETECH 2010)", Fodele, Greece, October 2010, p. 19.

185) “Fabrication of 4H-SiC Static Induction Transistors”
Antonis Stavrinidis, George Konstantinidis1, Maria Kayambaki and Konstantinos ZekentesProceedings of "20th European Workshop on Heterostructure Technology (HETECH 2011)", Lille, France, November 2011, p. ????.

186) “SiC nanowire FET operation improvement by using Schottky contacts at source and drain regions”
Konstantinos Rogdakis, Edwige Bano, Laurent Montes, Mikhael Bechelany, David Cornu and Konstantinos Zekentes
Proceedings of "35th Workshop on Compound Semiconductor Device and Integrated Circuits (WOCSDICE

2011)", Italy, 2011, p. 69.

187) "TCAD simulation of 4H-SiC physical parameters"
Dionysios Stefanakis, Konstantinos Zekentes
Proceedings of "21st European Workshop on Heterostructure Technology (HETECH 2012)", Barcelona, Spain, October 2012.

188) "Low temperature photoluminescence investigation of aluminum implanted 6H-SiC"
Teddy Robert**,** Maria Androulidaki**,** Pawel Kwasnicki, Hervé Peyre, Sandrine Juillaguet, Konstantinos Zekentes and Jean Camassel
Proceedings of "11th Expert evaluation & Control of Compound Semiconductor Materials & Technologies (EXMATEC 2012)", Porquerolles, France, May 2012.

189) "4H-SiC VJFETs with self-aligned contacts"
K. Zekentes, K. Vassilevski, A.B. Horsfall, N.G. Wright, A. Stavrinidis, G. Konstantinidis, M. Kayambaki
Proceedings of "36th Workshop on Compound Semiconductor Device and Integrated Circuits (WOCSDICE 2013)", Germany, 2013, p. 53.

190) "Temperature effect in Si NWs conversion to SiC by using MBE"
F Lloret, D. Araujo, K. Zekentes, M.P. Villar
Proceedings of "22th European Workshop on Heterostructure Technology (HETECH 2013)", Glascow, UK, September 2013, p.48

191) "Comparison of bottom-up and top-down 3C-SiC NWFETs"
J. Choi, E. Bano, L. Latu-Romain, A. Henry, G. Attolini and K. Zekentes
Proceedings of International Semiconductor Science Technology Conference 2014 (ISSTC'14), Istanbul, p. 28

192) "Electrical characterization procedure of power transistors: Application in the case of 4H-SiC VJFETs"
M. Vassakis, K. Vamvoukakis, M. Bucher, L. Liu, K. Zekentes
Proceedings of "37th Workshop on Compound Semiconductor Device and Integrated Circuits (WOCSDICE 2014)", Delphi, Greece, June 2014, p. 85

193) "TCAD simulations of 4H-SiC VJFETs"
D. Stefanakis, M. Vassakis, K. Vamvoukakis, L. Liu, D. Tassis, K. Zekentes
Proceedings of "37th Workshop on Compound Semiconductor Device and Integrated Circuits (WOCSDICE 2014)", Delphi, Greece, June 2014, p. 109

194) "Conversion of Si to SiC for nanowire FET fabrication"
F. Lloret, D. Araujo, M.P. Villar, L. Liu, K. Zekentes
Proceedings of "12th Expert evaluation & Control of Compound Semiconductor Materials & Technologies (EXMATEC 2014)", Delphi, Greece, June 2014, p. 273

195) "Electrical characterization of 4H-SiC VJFETs"
M. Vassakis, K. Vamvoukakis, M. Bucher, K. Zekentes
Proceedings of "23rd European Workshop on Heterostructure Technology (HETECH 2014)", Barcelona, Germany, October 2014, p.33

196) "Top-down 3C-SiC NWFETs"
Jihoon Choi, Edwige Bano, Anne Henry, Giovanni Attolini and Konstantinos Zekentes
Proceedings of "39th Workshop on Compound Semiconductor Device and Integrated Circuits (WOCSDICE 2016)", Aveiro, Portugal, June 2016, p.

197) "Silicon Carbide Nanowire Field Effect Transistors"
K. Zekentes, E. Bano
Proc. 13th International Conference on Atomically Controlled Surfaces, Interfaces and Nanostructures (ACSIN 2016), October 2016, Frascati, Rome, Italy, p. 33

198) "HIGH POWER SELF-ALIGNED, TRENCH-IMPLANTED 4H-SiC JFET"
K. Vamvoukakis, A. Stavrinidis, D. Stefanakis, G. Konstantinidis, M. Kayambaki, K. Zekentes
E3S Web of Conferences, 12001 (2017), 16
Proc. European Space Power Conference (ESPC 2016), October 2016, Thessaloniki, Greece
DOI: https://doi.org/10.1051/e3sconf/20171612001

199) "4H-SiC Nanowire arrays formation by nanoimprint lithography, plasma etching and sacrificial oxidation"
M. Cottat, A. Stavrinidis, C. Gourgon, C. Petit-Etienne, M. Androulidaki, E. Bano, G. Konstantinidis, J. Boussey, K. Zekentes Proc. WOCSDICE June 2019, Cabourg, France.

200) "A novel process to realize 4H-SiC nanowire arrays."
Maria Androulidaki, Maximilien Cottat, Antonios Stavrinidis, Cécile Gourgon, Camille Petit-Etienne, Edwige Bano, George Konstantinidis, Jumana Boussey, Konstantinos Zekentes. *MNE 2019*, Sep 2019, Rhodes, Greece. 〈hal-02344211〉

201) "a-SiC:H Characterization Towards Optimal MEA Neural Interface Passivattion"
S. Greenhorn, K. Zekentes, E. Bano, V. Stambouli, A. Uvarov. WOCSDICE-EXMATEC 2022, Ponta Delgada, PT

202) "Photonic and plasmonic responses of silicon carbide nanopillars and their aerogel clones."
Maria Androulidaki, Jumanna Boussey, Katerina Tsagaraki, Antonios Stavrinidis, Athanasios Kostopoulos, Konstantina Papachristopoulou, George Konstantinidis, Konstantinos Zekentes and Nikolaos Vainos
MicroNano2023, 2-5 November 2023, NCSR Demokritos, Athens, Greece.

203) "Composition and structure determination of PECVD amorphous silicon carbide: techniques, synergies, and optimization"
S. Greenhorn, V. Stambouli, E. Bano, A. Uvarov, B. Pelissier, M. Veillerot, F. Pieere, N. Gauthier, A. Lagoyannis, M. Weber, K. Zekentes.. WOCSDICE-EXMATEC 2024, Heraklion, GR.

204) "Hydrogel-based functionalization of SiC films for new hybrid neural interfaces."
S. Greenhorn, R. Auzély, C. Verdier, M. Weber, I. Gélard, A. Uvarov, E. Bano, K. Zekentes, V. Stambouli. E-MRS Spring Meeting 2024, Symposium I:Nano-engineered coatings and thin films: from fundamentals to applications, Strasbourg, FR.

205) "Optimizing a-SiC Film Chemical Resistance for Long-Lifetime All-SiC Neural Interfaces"
S. Greenhorn, A. Uvarov, E. Bano, K. Zekentes, V. Stambouli.
Symposium V: 6th E-MRS & MRS-K bilateral symposium "X-tronics": Optoelectronic and Bioelectronic - From Materials to Devices, Strasbourg, FR.

206) "SiC device processing technology. Application to the fabrication of neural interfaces and biosensors "
Konstantinos Zekentes, WOCSDICE 2025, June 2025, Cadiz, Spain

Publications in proceedings of National Conferences

1) "Gas source molecular beam epitaxy of 3C-SiC on Si substrates"
K. Zekentes, K. Tsagaraki, M. Androulidaki, J. Stoemenos, N. Becourt
XI Hellenic Conference of Solid State Physics, 1995, Xanthi

2) "Conversion of Si surface to 3C-SiC with Molecular Beam Epitaxy" K. Zekentes, J. Stoimenos,
X Hellenic Conference of Solid State Physics, 1994, Delphes

3) "Stability of Au Schottky diodes on β-SiC" N. Kornilios, G. Konstanidis, M. Kayiambaki, K. Tsagaraki, K. Zekentes, J. Stoimenos, X Hellenic Conference of Solid State Physics, 1994, Delphes

4) "High sensitivity Hall sensors with low thermal drift using AlGaAs/InGaAs/GaAs heterostructures" K. Zekentes , TEE meeting on Sensors, May 1993

5) "Caracterisation des niveaux profonds dans AlInAs epitaxie par jets moleculaires" S. Ababou, C. Raynaud, G. Guillot, S. Clark, K. Zekentes, 3emes Journees de la Matiere Condensee, 1992, Lille

6) "Determination par spectroscopie d'admittance de la discontinuite de bande dans des puits quantiques GaInAs-AlInAs" S. Ababou, G. Guillot, S. Clark, K. Zekentes, 3emes Journees de la Matiere Condensee, 1992, Lille

7) "Selective epitaxy of $In_{0.53}Ga_{0.47}As$ on (001) InP substrates" K. Zekentes, K. Tsagaraki, A. Dimoulas, K. Michelakis, A. Georgakilas, A. Christou
VII Hellenic Conference of Solid State Physics, 1991, Thessaloniki

8) "Determination of charges distribution in structures, of III-V based semiconductors, by the C-V profiling method" N. Kornilios, K. Zekentes
VII Hellenic Conference of Solid State Physics, 1991, Thessaloniki

9) "Confined States in InGaAs/InAlAs single quantum wells studied at high electirc fields" A. Dimoulas, A. Georgakilas, K. Zekentes, K. Michelakis, G. Halkias, A. Christou VII Hellenic Conference of Solid State Physics, 1991, Thessaloniki

10) "Etude des effets de pression sur la localisation faible des electrons 2D d'une heterojonction: Magnetoresistance negative de GaAs/GaAlAs"
S.Ravanomanjato, K.Zekentes, J.L.Robert,G.Cohen-Solal
Conference nationale de la Societe Francaise de Physique, Montpellier 1990

11) "Weak Localization of 2D electron gas in GaAs-GaAlAs heterostructures under hydrostatic pressure" K.Zekentes, J.L.Robert VI Hellenic Conference of Solid State Physics, 1990, Heraklion , Crete

12) “A Compact Model for Silicon Carbide JFET”
Konstantinos Kostopoulos, Matthias Bucher, Maria Kayambaki, and Konstantinos Zekentes
PACET 2012, Thessaloniki, Greece, March 16-18

APPROVED RESEARCH GRANTS

For the following grants, Dr. Zekentes was the principal investigator and the responsible person for the development of the grant concerning FORTH's contribution.

Years	Sponsor	Title	FORTH's Budget
1991-1992	CNRS-FRANCE /GreekMinistry of Research	Study of III-V compounds under hydrostatic pressure	~8 K€ (2MDrs)
1992-1993	Schlumberger S.A	Hall sensor development	22 K€ (20 K$)
1993-1996	CEC/Brite EuRam II Project 5416	Technology & characterisation of Silicon Carbide films for high temperature applications	182 K€
1995-1998*	EEC-EPET II/Greek Ministry of Research	National Optoelectronic Vision Systems	326 K€
1996-1998	CEC/TMR program	European Conference on SiC & Related Materials	39 K€
1997-1998*	SPAIN-GREECE/Greek Ministry of Research	Two step growth (LPCVD &MBE) of β-SiCon Si substrates	8 K€ (2.4 MDrs)
1997-1998*	Univ. Montpellier II	Quantum Well Infrared Photodetectors	2.5 K€ (2.5 K$)
1998-1999*	CNRS-FRANCE/Greek Ministry of Research	Development of microsensors for high temperature and gas detection applications	3.7 K€ (1.2 MDrs)
1998*	NATO Fellowship	Design and Processing of Silicon Carbide high frequency devices	2 K (80 KBEF)
1998-2000**	Greek MoD/WEAG THALES JP 1.3	Conformal Array Antenna Technology	65 K€ (22.5MDrs)
1998-2001*	NATO SfP/GSRT	High Power & High Frequency devices	90 K€(3.6MBEF)
1998-2000*	INTAS Assoc.	Electron transport & avalanche ionisation in 4H-SiCpn-structures at high electric fields; Developmentof W-band SiC IMPATT diode with 60W pulse power	6 K€
1999*	NATO Fellowship	Surface preparation of SiC by ozone treatment	2 K€ (80 KBEF)
2000*	NATO Fellowship	Schottky diodes on n-type 4H-SiC	2 K€ (80 KBEF)
2000*	Office of Naval Research	Sponsorship of WOCSDICE 2000	4.5 K€ (4 KUS$)
2000*	Greek Ministry of Research	Sponsorship of EXMATEC 2000	3 K€ (1 MDrs)
2001*	NATO Fellowship	Excess currents, degradation mechanisms and structural defects in SiC pn structures.	2 K€ (80 KBEF)
2002*	US Army - ERO	Power silicon carbide p-i-n diodes for ultra high frequency applications	26 K USD
2002*	NATO Fellowship	Microwave characterization and modelling of 4H-SiC IMPATT diodes	2 K€ (80 KBEF)
2003-2005*	Romania-Greece/Greek Ministry of Research	Periphery isolation for 4H-SiC high frequency power p-i-n diodes with applications in wireless communications	12.2 K€
2003-2004	PRAXE/GSRT- Greek Ministry of Research	Production of silicon carbide electronic diodes for microwave applications	44 K€

2002-2005	INTAS Assoc.	Electron transport in 4*H*-SiC *p-i-n* structures at high frequency electric field; development of SiC pin diode for microwave power handling.	8 K€
2004*	NATO Fellowship	Current transfer mechanisms in 4H-SiC pn diodes. Modelling of electrons cattering mechanisms.	2 K€
2002-2005	NATO SfP/GSRT-Greek Ministry of Research	Microwave Switching Units Based on 4H-SiC p-i-n Diodes (SICPIN)	102 K€
2004*	Greek Ministry of Culture	Sponsorship of HETECH 2004	3 K€
2005*	NATO Fellowship	Electrochemical CV profiling of n-type 4H-SiC.	2 K€
2005-2007*	Ukraine-Greece/GSRT-Greek Ministry of Research	High voltage –high temperature 4H-SiC pin diodes	10.2 K€
2005-2008	PENED/ GSRT- Greek Ministry of Research	Power amplifiers for WIMAX applications	62.5 K€
2006-2008*	RTD Korea/ GSRT-Greek Ministry of Research	Silicon Carbide nanowire field effect transistors	47.5 K€
2007-2008*	Regional Innovation Pole of Crete- GSRT	Industrial Application of Microelectronic Systems	80 K€
2008*	ESA-Greece Phase A'	SiC device in power designs for space applications	120 K€
2009*	ESA-Greece CCN1	SiC device in power designs for space applications	30 K€
2010-2013	ENIAC European Platform	LAST-POWER	120 K€
2010-2013	ENIAC European Platform	MIRANDELA	280 K€
2010-2014*	SYNERGASIA/GSRT-Greek Ministry of Research	SiC-based power transistors and inverter for photovoltaic applications	230 K€
2015	Fulbright Grant	4H-SiC Anisotropy under high electric field Avalanche photodiodes on a- and m- planes	6.9 K€
2016-2017	Marie-Curie-IF grant	SICWIRE - Silicon Carbide Nanowires for Electronic and biosensing applications	90.2 K€
2022-2025	ANR, France	All silicon carbide long-lifetime neural interfaces. (SiCNeural)	IMEP-LAHC funded
2022-2025	Initiative d'excellence Université Grenoble Alpes	Neurotechnologies for functional rehabilitation (CDP Grenoble-Neurotech)	IMEP-LAHC funded
2024-2026	Region Auvergne-Alpes/FORTH	Ambition Internationale 2023 : projet de coopération BIOSiC	78,3 K€/26,6 K€
2024-2026	FORTH/Synergy	BioHybrid Epidural Electrode Probes for Spinal Cord Treatments (BioHySiC)	80 K€

*Dr. Zekentes is the coordinator of the consortium.

**Dr. Zekentes is the first researcher of FORTH having a research contract with the Greek Ministry of Defense.

Dr. Zekentes has been also involved in the following European commission funded projects:

- ESPRIT 2035(GIANTS), “Advanced InGaAs-Based Transistors for High Speed Integrated Circuits”
- ESPRIT 2289(OLIVES), “Optical Interconnections for VLSI & Electronic Systems”
- ESPRIT 3086(Basic Research), “Low Dimensionality for Future Quantum Semiconductor Devices”
- ESPRIT 5018(COSMIC), “GaAs Monolithic Analog Circuits for Microwave Communication Systems up to 23GHz”
- RACE 1027, “Integrated Optoelectronic Components for Optical Signal Processing”
- IST NOE (TARGET) “Top Amplifier Research Groups in a European Teamwork”
- IST NOE (AMICOM)
- ENIAC European Platform "SE2A"

Dr. Zekentes has been also involved in the following Greek government funded projects:

- PYTHAGORAS "Spectroscopic analysis of thin metallic layers deposited on the top of wide bandgap semiconductors".
- PYTHAGORAS " Laser annealing of SiC and Si films and characterization of their electrical and optical properties"

RESEARCH SYNOPSIS*

SiC-related effort:

Development of SiC-based device technology

2019- present Comprehensive experimental study of SiC for biosensing and neural implants applications. Typical 3C-SiC-NWFETs [142)] and 4H-SiC Ion Sensitive Junction FETs (ISJFETs) [142)] have been investigated as biosensors. The latter exhibited state-of the-art performance for a double gate FET-based biosensor and a patent application has been filed. Nevertheless, a higher effort is dedicated to the development of SiC neural implants by investigating a-SiC [79) 82) 84)], poly-SiC [81)80) 81)] and single crystalline (3C-, 4H-) SiC [144)] as materials for the fabrication of all-SiC neural implants. The functionalization of a-SiC with hyaluronic acid to reduce foreign body response has been investigated for the first time [83)]. The different-phase-SiC material properties have been thoroughly investigated [79) 82) 84), 81)80) 81), 86)] and the device technology has been developed [206) 85)]. The first ex-vivo prototypes have been fabricated and are under investigation.

2007- present Comprehensive theoretical and experimental study of 3C-SiC based Nanowire FETs (NWFETs) [72)] and SiC NW based applications. The theoretical simulations are the first for the SiC NWFETs [60), 71)]. A good gating effect has been observed for the first time by using rectifying drain and source contacts [72)]. Major factors controlling the device operation have been considered by simulation, electrical characterization and comparison of bottom-up and top-down geometries [125) 132), 197)]. The recent effort focuses on the use of SiC-NWFETs for biosensing applications [141)] as mentioned above.

2009-2019 Development of 4H-SiC based Vertical Junction Field Effect Transistors (VJFETs) [126) 198)]. Thorough analysis of all device processing steps [76), 134)], electrical characterization [129), 135)] with emphasis on Al implantation [127) 128) 133)]. Device modeling [74), 131)] completes the effort.

2003-2008 Development of the first single diode microwave switch [55)] and multi(2,3)-diode microwave modulators [63)] based on 4H-SiC p-i-n high voltage (>1000 Volt) diodes. Various aspects of the p-i-n diode fabrication technology and operation have been examined like the effect of RIE mesa-etching on the forward-bias degradation [52)] the use of lasers for via-hole formation [112)] and annealing of implanted layers [59)] and the spatial extend of the avalanche breakdown region [98), 110)].

1998-2003 Development of the first IMPAct ionization Transit Time (IMPATT) diode on 4H-SiC [43)]. Towards this aim, pn diodes with record series resistivity were fabricated [38)], state-of-the-art ohmic contacts on p-type 4H-SiC were developed [45)] and the electron velocity along the c-axis of 4H-SiC was determined experimentally for the first time [42)]. First investigation of Reactive Ion Etching (RIE) of 4H-SiC by reflectometry and optical emission spectroscopy [49)]. A commercial Electrochemical C-V (ECV) apparatus was used for obtaining accurate doping profiles and evaluating the type and density of crystal defects of p-type 4H-SiC for the first time [40)].

1993-1997 Coordination of the MRG's processing team developing state-of-the-art thermally stable technology (ohmic [30)] and Schottky [29)] contacts as well as RIE) on n-type 3C-SiC.

Molecular Beam Epitaxy growth of cubic SiC on Si

2011 Growth of Si and SiC nanowires.

2003-2005 Linearly aligned self-assembled SiC dots were formed for the first time on Si substrates by molecular beam epitaxy [50), 51)].

1998-2003 The use of Ge as a surfactant for this heteroepitaxial system growth was proposed for the first time [35)] and it has been investigated by other groups. Towards this aim, a systematic RHEED study of the transition from the 2D to 3D growth mode of the Ge/Si(100) system at low and high temperatures was performed and a phase diagram was constructed for the first time [41)]. First experiments showed that Ge affects growth kinetics [95)].

1993-1998 A Si-MBE dedicated chamber was modified for growing SiC by solid source [24)] and gas source MBE [28)]. A model for the early stages of growth was proposed [26)]. The Deep Level Transient Spectroscopy (DLTS) study of the defects in 3C-SiC grown on Si [25)] is used as a reference work for all subsequent studies.

* *The cited references are from the archival publications reported previously.*

III-V's related effort:

Development of intersubband-transitions-based devices

1995-1998 Realization (MBE growth, processing technology coordination, material and device characterization) of Quantum Well Infrared Photodetectors (QWIPs) with the aim to be incorporated in a multiple purpose observatory system under development by Hellenic Aerospace Industry SA. Similar intersubband-transitions-structures were used for the fabrication of a gas (CO) sensor patented by Schlumberger Industries [39)].

Development of III-V based microwave transistors, optical modulators and Hall sensors.

1990-1995 MBE growth of the structure of state-of-the-art FET, HEMT, PMHEMT and optical modulators based on GaAs, GaAs/GaAlAs, GaAs/InGaAs/GaAlAs, InAlAs/InGaAs material systems [4), 6), 11)]. Emphasis in material studies was devoted to the InAlAs and InGaAs alloys grown on InP substrates [5), 12)]. Substantial contribution (MBE growth, device processing, material characterization and physical properties of two-dimensional electron gas [16)]) in the development of currently commercial available Hall sensors (CENTRON model, Schlumberger SA) for power metering application based on GaAs/InGaAs/GaAlAs pseudomorphic (PM) structures [20)].

Ph. D. Dissertation relative work:

1985-1989 Hydrostatic pressure has been used for the first time to vary the relevant perturbation parameter $k_F l_0$ by two orders of magnitude [1)]. The whole range of weak-localization regime from the metallic to almost localized regions in the same sample was covered. Negative magnetoresistance studies showed that the inelastic scattering time and its exponential factor are well accounted for by the theoretical models. The experimental data agree well with Shapiro-Abrahams considerations of a fractional dimensionality $d=2+\varepsilon$, with ε=0.25 [18)].

RESEARCH PERSPECTIVES

MRG–FORTH and CROMA–Grenoble INP are jointly developing SiC-based biosensors and neural interfaces. A major challenge for such devices is the degradation of insulating layers or delamination at conductor–insulator interfaces, often due to water absorption. Using silicon carbide (SiC) as a single, biocompatible material offers a solution. SiC is chemically inert, corrosion-resistant, non-toxic, and mechanically robust, enabling thin, flexible probes. Its mature device technology allows all-SiC electrodes and sensors that integrate support, conduction (via heavily doped SiC), and insulation (via amorphous SiC)—a unique single-material platform.

Our goal is to demonstrate SiC as the sole material for neural interfaces and biosensors, combining structural, insulating, and functional roles. We have optimized and adapted SiC in amorphous, polycrystalline, and single-crystalline forms for biomedical use.

Next steps include fabricating and testing prototypes such as:

- FET-based biosensors for hormones (dopamine, serotonin, oxytocin, cortisol).
- μECoG devices for acute and chronic cortical monitoring in animals.
- μECoG devices for spinal cord injury studies in mice, integrated with Porous Collagen Scaffolds (PCS) to reduce foreign body response.