

Şeref Kalem

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Education

University of Paris VII (www.jussieu.fr)

- Ph.D. in Physics (Thèse de Doctorat d'État ès Sciences Physiques), 1983
Solid State Physics Laboratory LPS-CNRS, Meudon-Bellevue (www.cnrs-bellevue.fr)
- D.E.A. (Diplome d'Etudes Approfondies), Physics, 1979
- MSc. Physics, 1978,

University of Hacettepe, Department of Physics (www.hacettepe.edu.tr) □

- M.Sc. Physics, 1977
- BSc. Physics, 1975

Employment history

TUBITAK – BILGEM (www.bilgem.tubitak.gov.tr)

Mesoscopic Systems Laboratory

Principal Investigator – Chief Expert Researcher, Assoc. Prof., 1995 – 30 September

Quantum information science and technologies; quantum electronics, microelectronics, quantum hardware (quantum dots, wires & atom qubits), point defects in semiconductors, embedded non-volatile resistive memories ReRAM, neuromorphic devices, FD-SOI CMOS technology, quantum cryptography, quantum computing, quantum sensing&timing, photoluminescence, Raman, time-resolved luminescence, non-linear optics, active thermal imaging, weak signal detection using phase sensitive lock-in amplifier technique, advanced microelectronics packaging, characterization of semiconductor devices; multi-chip module design & process integration, light emitting semiconductors & devices, solar cells; UHV cryogenic (LHe) electronics.

TUBITAK-Fundamental Sciences Research Institute(TBAE), Department of Physics : 1992-1995

Chief Researcher, Research Coordinator of Experimental Condensed Matter Physics projects, Principal Investigator of Mesoscopic Systems project.

University of Illinois at Urbana-Champaign, Urbana, IL (www.uiuc.edu)

Visiting Assoc. Prof., Department of Electrical and Computer Engineering, 1995 and 1998

- Project Coordinator, Center for Compound Semiconductor Microelectronics.
- Energy up-conversion effect in III-V compound semiconductor heterostructures.

Microelectronics Center of North Carolina (www.mcnc.org) and North Carolina State University

Resident Scientist, Semiconductor Technology Division, 1990 – 1992

- Multi-chip modules process integration (MCM).
- Project Manager, ECR plasma cleaning and etching system construction; MOS capacitor fabrication and investigation of trap densities at Si/SiO₂ interfaces.

University of Illinois at Urbana-Champaign, Urbana, Illinois (www.uiuc.edu)

Research Associate, Coordinated Science Laboratory,

Department of Electrical and Computer Engineering, 1987 – 1990

- High Speed Devices: MBE Growth, characterization and fabrication of related devices.

University of Sheffield, Sheffield,UK (www.shef.ac.uk),

Post-Doctoral Research Fellow, Department of Physics, 1985 – 1987

Optical spectroscopy using beam deflection techniques and low temperature photoluminescence.

University of Hacettepe (www.hacettepe.edu.tr), Beytepe, Ankara

Assistant Professor, Department of Physics, 1984 – 1985, Solid State Physics.

Institute of Mineral Research and Exploration, Ankara <http://www.mta.gov.tr>

Engineer, Division of Geophysics, Department of Solar Energy, 1977 – 1978

Solar Cells and Photovoltaic Energy Conversion Devices

Teaching

Quantum technologies, Nanoelectronics, Solid State Physics, Quantum Electronics, Micro and Opto-electronics, photonics, mesoscopic physics.

Referee

Professional journals: IEEE, OSA, AIP, ACS, OPTICS EXPRESS, Optical Letters, Nanotechnology, TUBITAK (Book, paper, research proposal)

Project Evaluator, Rapporteur and Reviewer

- Vice Chair, FET-OPEN project evaluation, European Commission, Horizon 2020, ICT
- Project Evaluator and rapporteur, European Commission (ICT, Energy, research for SMEs)
- Project Reviewer/Monitor, European Commission and TUBITAK

Awards

- TUBITAK-BILGEM Research Price, the best research award of the year 2014
- SERC Research Award, UK
- TWAS, ICTP, Research award, Italy
- CIES, PhD fellowship, France
- NATO Science for Stability, Research award.

Research Projects

- WAKEMEUP, Wafers for Automotive and other **Key** applications using **Memories**, embedded in **Ulsi** Processors, ECSEL project: 01.05.2018 – 01.05.2021 (Principal Investigator).
- PANACHE, Embedded Non-Volatile Memories and applications, ENIAC, Nanoelectronics project, 01.01.2014 - 01.01.2018 (Principal Investigator).
- THINGS2DO, Thin but great silicon 2 design objects: FD-SOI technology and applications, ENIAC, Nanoelectronics project, 01.01.2014 - 01.01.2018. (Principal Investigator).
- ARDEB 1001 projects, eNVM Bellek and FDSOI technology :15.05.2017 – 15.05.2020 (Principal Investigator).
- Mesoscopic systems, Principal Investigator(PI), TUBITAK, 1992-2013
- Investigation of nonradiative recombination processes in mesoscopic systems, PI, TWAS funding.
- Energy up-conversion effect in semiconductor heterostructures, PI, NATO funding.
- Remote sensing and imaging of surfaces and chemicals with lasers, PI, TSK
- Electron Cyclotron Resonance-ECR plasma enhanced MBE, PI, MSB-ARGE (Principal Investigator).
- CADRES, EU-FP6 project, Defects relevant to engineering advanced Si based devices, <http://extra.shu.ac.uk/cadres/> (Principal Investigator).
- FP6-MC2ACCESS project, Fabrication and evaluation of nano-wires and low-k dielectrics based on

- Silicon Fluoride crytocrystals, <http://www.mc2.chalmers.se/mc2access>
- Growth and physical properties of Si and Si-Ge nanowires, BMBF(Germany)-TUBITAK(TBAG), joint project with Max-Planck Institute. (Principal Investigator).
- Laser LAB – Europe Research Infrastructure project. Photoluminescence Dynamics of silicon and germanium quantum structures (Principal Investigator).
- NV centers and addressable defects in semiconductors, TUBITAK-UEKAE

Patents

- EPO European Patent Office, Methods for producing new silicon light source and devices¹¹WO 2013164659 A1 2012, PCT/IB2012/052146, EP 12726648.4, 2016.
- EURASIAN Patent No: 013649 “Microcrystalline and nanocrystalline structures with low-dielectric constant for high-tech applications” Issue date : 30.06.2010
- CHINA patent No:ZL200680017063.1 “Low dielectric constant crytocrystal layers and nanostructures” Issue date : 04.05.2011
- USA Patent application no:11/908,778 “Low dielectric constant crytocrystal layers and nanostructures” US20080191218A1
- Japanese Patent No: 2008-501454 “a wafer bonding method”
<https://www.google.com.au/patents/EP2845273A1?dq=EP+2845273&cl=en>
- CANADIAN Patent , nanostructures et couches crytocrystallines a faible constant dielectrique, patent No:2602365, 2017/05/09, Ottawa-Hull K1A 0C9 OPIC.

Fellowships and memberships

- Fellowship from the CIES of France for D.E.A. and Ph.D. studies
- Research awards from the NATO, TWAS of Italy and SERC of the UK
- Membership at IEEE, OSA and APS.
- ENIAC-SCC (European Nanoelectronics Initiative Advisory Council - Scientific Community Council).
- TUBITAK-ARGES member, 2016-2019.

PUBLICATION LIST (REFEREED JOURNALS)

- Z. E. Kaya ; S. B. Tekin ; **S. Kalem**, Energy harvesting power management circuit design in 22nm FDSOI technology, p. 1-4, 2018 IEEE Xplore DOI: [10.1109/ULIS.2018.8354748](https://doi.org/10.1109/ULIS.2018.8354748)
- Z. E. Kaya ; S. B. Tekin ; **S. Kalem**, Design of an FPGA-based RRAM parameter measurement platform, P 1407 - 1411, 2018. IEEE Xplore DOI: [10.1109/ICIT.2018.8352386](https://doi.org/10.1109/ICIT.2018.8352386).
- S. B. Tekin ; **S. Kalem** ; Z. E. Kaya ; [E. Jalaguier](#), Electrical characterization of HfO₂ based resistive RAM devices having different bottom electrode metallizations, IEEE Xplore DOI: [10.1109/ULIS.2018.8354734](https://doi.org/10.1109/ULIS.2018.8354734)
- S. Kalem**, SB Tekin, ZE Kaya, AE Hannas and V Sundström, “Si measurements: SiO_x on Si”, IEEE Xplore, Proc. EUROSOI-ULIS, p.235-238, 2017. DOI: [10.1109/ULIS.2017.7962571](https://doi.org/10.1109/ULIS.2017.7962571)
- S. Kalem**, SB Tekin & R. Roelofs “Feasibility demonstration of new e-NVM cells suitable for integration at 28nm”, IEEE Xplore, Proc. EUROSOI-ULIS, p.53, 2017. DOI: [10.1109/ULIS.2017.7962599](https://doi.org/10.1109/ULIS.2017.7962599)
- S. Kalem**, " Controlling photon emission from silicon for photonic applications ", Proc. SPIE 9364, Oxide-based Materials and Devices VI, 93641P (March 13, 2015);
doi:10.1117/12.2177640; <http://dx.doi.org/10.1117/12.2177640>
- Şeref Kalem**
Defect studies in strain-relaxed Si_{1-x}Ge_x alloys^[1]Turk. J. Phys., **37**, (2013), 275-282^[1][Abstract](#) Full text:[pdf](#)
- S. Kalem**, Ö.Arthursson, P.Werner, “Ellipsometry studies of Si/Ge superlattices with embedded Ge dots”, Applied Physics-A, Volume 112, [Issue 3](#), pp 555-559, 2013
- S. Kalem**, P.Werner, V.Talalaev, “Near-IR Photoluminescence from Si/Ge Nanowire Grown Silicon Wafers” Applied Physics-A, Volume 112, [Issue 3](#), pp 561-567 2013.
- S Kalem**, P Werner, O Arthursson, V Talalaev, B Nilsson, M Hagberg, H Frederiksen and U Sodervall “Black silicon with high density and high aspect ratio nanowhiskers”, Nanotechnology 22 (2011) 235307 (8pp)
[doi:10.1088/0957-4484/22/23/235307](https://doi.org/10.1088/0957-4484/22/23/235307)
- S. Kalem**, P. Werner, V.Talalaev, M.Becker, Ö.Arthursson and N. Zakharov, “Photoluminescence from Silicon nanoparticles embedded in ammonium silicon hexafluoride”, Nanotechnology 2010 Nanotechnology 21 (2010) 435701 [Nanotechnology, 21, 435701-8 \(2010\)](#)
- Seref Kalem**, Örjan Arthursson, Igor Romandic
Formation of germanates on germanium by chemical vapor treatment, Thin Solid Films 518 (2010) 2377–2380
<http://www.sciencedirect.com/science/article/pii/S0040609009016071>
- S. Kalem**, Ö. Arthursson, I. Romandic,
“Transformation of Germanium to fluogermanates” Applied Physics-A 98, 423(2010).
<http://www.springerlink.com/openurl.asp?genre=article&id=doi:10.1007/s00339-009-5411-z>.
- S. Kalem**, P. Werner, B. Nilsson, V.G. Talalaev, M. Hagberg, Ö. Arthursson, U. Södervall,
“Controlled thinning and surface smoothening of Silicon nanopillars“, Nanotechnology 20, 445303(2009).
[Nanotechnology, 20, 445303-7 \(2009\)](#)

S. Kalem

“Self-organization of ammonium silicon hexafluoride complex low-dimensional structures on Silicon”, Superlattices and Microstructures 44 (2008) 705–713. <http://dx.doi.org/10.1016/j.spmi.2008.07.003>.

S. Kalem, I. Romandic, A. Theuwis

Optical characterization of dislocation free Ge and GeOI wafers, Materials Science in Semiconductor Processing 9 (2006) 753–758. <http://dx.doi.org/10.1016/j.mssp.2006.08.035>.

S. Kalem

Possible low-k solutions and other potential applications, European Semiconductor 26, 31(2004). <http://www.eurosemi.eu.com/front-end/features-full.php?id=5492>

S. Kalem

Synthesis of ammonium silicon fluoride cryptocrystals on Silicon, Applied Surface Science 236, 336(2004) <http://arxiv.org/abs/cond-mat/0410606>

S. Kalem

Sub-gap excited photoluminescence in III-V compound semiconductor heterostructures Physica Status Solidi (b)221, 517(2000).

S. Kalem, A. Curtis, H.C. Chung, and G.E. Stillman

Photoluminescence in GaAs and InGaP single layers on InP, Solid State Communications 115, 221(2000).

S. Kalem, A. Curtis, H-C. Kuo and G.E. Stillman

Recombination in tensile strained InGaAs quantum well on InP, Applied Physic-A 71, 153 (2000).

S. Kalem, O. Yavuzcetin, and A. Altineller

Effect of light exposure and ultrasound on the formation of porous silicon, Journal of Porous Materials 7, 381(2000)

S. Kalem and O. Yavuzcetin

Possibility of fabricating light emitting porous silicon devices from gas phase etchants Optics Express 6, 7(2000). <http://www.opticsexpress.org/oearchive/source/14455.htm>

S. Kalem, A. Curtis, W.B. de Boer, and G.E. Stillman

Low temperature photoluminescence in SiGe single quantum wells, Applied Physics-A 66, 23(1998).

S. Kalem and B. Jusserand

Physical properties of GaAs grown on glass, Applied Physics-A, Vol.62, No.3, 237(1996).

S. Kalem and M. Rosenbauer

Optical and structural investigation of stain-etched silicon, Applied Physics letters 67, 2551(1995).

S. Kalem et al.,

The effects of surface treatment on optical and vibrational properties of stain etched Silicon, J. Nano-Structured Materials 6, 847(1995).

S. Kalem and G.E. Stillman

Deep acceptor levels in molecular beam epitaxial high purity p-type GaAs Japanese Journal of applied Physics 33, Part 1, No.11, 6086(1994).

B. Theys, **S. Kalem**, A.Lusson, J.Chevallier, N.Gillot, C.Grattepain, Hydrogenation of InAs on GaAs heterostructures, *Journal of Applied Physics* 70, 1461(1991).

S. Kalem

Transport properties of InAs epilayers grown by molecular beam epitaxy
Semiconductor Science and Technology 5, S200(1990).

J. Laskar, J.Kolodzey, S.Boor, K.C.Hsieh, **S. Kalem**, S.Caracci, A.A.Ketterson, T.Brock, I.Adesida, D.Sivco and A.Y. Cho

High indium content graded channel GaInAs/AlInAs pseudomorphic MODFET's
Journal of Electronic Materials 19, 249(1989).

T. Maruyama, R. Prepost, E.L. Garwin, C.K. Sinclair, B.Dunham, and **S. Kalem**,
Enhanced electron spin-polarization in the photoemission from thin GaAs, *Applied Physics Letters* 55, 1686(1989).

S. Kalem

Molecular beam epitaxial growth and transport properties of InAs epilayers, *J. of Applied Physics* 66, 3097(1989).

R.D.Grober, H.D.Drew, J.Chyi, **S. Kalem** and H.Morkoc
Infrared photoluminescence of InAs epilayers grown on GaAs and Si substrates, *J. of Applied Physics* 65, 4079(1989).

M.B.Patil, D.Mui, **S. Kalem** and H.Morkoc
Reduced backgating effect in modulation doped field effect transistors by p-n junction isolation
Applied Physics Lett. 53, 2417 (1988).

W. Dobbelaere, D.Huang, **S. Kalem** and H.Morkoc
InGaAs/GaAs multiple quantum well reflection modulators, *Electron. Letters* 24, 1239(1988).

J. Chyi, **S. Kalem**, N.S.Kumar, C.W.Litton and H.Morkoc
Growth of InSb and InAsSb on GaAs by molecular beam epitaxy, *Applied Physics Letters* 53, 1092 (1988).

S. Kalem, J.Chyi, H. Morkoc
Growth and transport properties of InAs epilayers on GaAs, *Applied Physics Letters* 53, 1647(1988).

S. Kalem, J.Chyi, C.W.Litton, H.Morkoc, S.C.Kan and A.Yariv
Electrical properties of InAs epilayers grown by molecular beam epitaxy on Si, *Applied Phys. Lett.* 53, 562(1988).

W.Dobbelaere, **S. Kalem**, D.Huang, S. Unlu, H.Morkoc
GaInAs/GaAs strained layer MQW electro-absorption optical modulator and self-electro-optic effect device,
Electron Letters 24, 295(1988).

S. Kalem

Optical investigation of a-Si:H/a-SiNx:H superlattices, *Physical Review B* 37, 8837 (1988).

S. Kalem

a-Si:H/a-SiNx:H superlattices:confinement or contamination, *J. of Superlattices and Microstructures*4, 325(1988).

T.M. Searle, M.Hopkinson, M.Edmeades, **S. Kalem**, I.G.Austin and R.A.Gibson
Recombination in a-Si:H based materials:evidence for two slow radiative processes
Disordered Semiconductors, Ed. M.Kastner et al., Plenum Publishing Corp., 1987, pp.357.

S. Kalem, R.Moustafoui, J.Bourneix and J.Chevallier
Infrared spectroscopy of hydrogenated and chlorinated amorphous silicon, Phil. Mag. 53, 509(1986).

S.A.Dallal, **S. Kalem**, J.Bourneix, J.Chevallier, M.Toulemonde
Transport properties of hydrogenated and chlorinated amorphous silicon:correlation with IR spectra
Philosophical Magazine B40, 493(1984).

S.A.Dallal, J.Chevallier, **S.Kalem** and J.Bourneix
Effect of chlorine on the photoluminescence spectra of hydrogenated and chlorinated amorphous silicon prepared by glow discharge, J. of Non-Crystalline Solids, 59/60, 361(1983).

J.Chevallier, **S. Kalem**, J.Bourneix and M.Vandevyver
New silicon-hydrogen infrared vibrational band associated to H-Si-Cl configuration in amorphous silicon matrix:Green's function theory approach, Physica 117B&118B, 874(1983).

J. Chevallier, **S. Kalem**, S.A.Al Dallal, J.Bourneix
Optical and electrical properties of a-Si:H:Cl prepared by glow discharge, J. of Non-Cryst. Solids 51, 277(1982).

CHAPTERS IN BOOKS:

T.M. Searle, M.Hopkinson, M.Edmeades, **S.Kalem**, I.G.Austin and R.A.Gibson
Recombination in a-Si:H based materials:evidence for two slow radiative processes
Disordered Semiconductors, Ed. M.Kastner et al., Plenum Publishing Corp., 1987, pp.357.

CONFERENCE PAPERS:

Z. E. Kaya, S. B. Tekin, **S. Kalem**, “Energy harvesting power management circuit design in 22nm FDSOI technology”, EUROSOCI-ULIS 2018, 19-21 March 2018, Granada, Spain, 2018.

Z. E. Kaya, S. B. Tekin, **S. Kalem**, “Energy Harvesting PMIC Design”, IPSOC Grenoble 2017, 5-8 December, 2017.

S. Kalem, SB Tekin, ZE Kaya, AE Hannas and V Sundström, “Si measurements: SiO_x on Si”, IEEE Xplore, EUROSOCI-ULIS Workshop and International Conference on Ultimate Integration on Silicon, p.235-238, 2017.
DOI: [10.1109/ULIS.2017.7962571](https://doi.org/10.1109/ULIS.2017.7962571)

S. Kalem, SB Tekin and R. Roelofs “Feasibility demonstration of new e-NVM cells suitable for integration at 28nm”, IEEE Xplore, EUROSOCI-ULIS Workshop and International Conference on Ultimate Integration on Silicon, p.53-56, 2017. DOI: [10.1109/ULIS.2017.7962599](https://doi.org/10.1109/ULIS.2017.7962599)

Seref Kalem, Örjan Arthursson, Peter Werner, “Optical response of Si/Ge superlattices with embedded Ge dots” Photonic Global Conference (PGC) 2012, 13-16 December, Singapore. DOI: [10.1109/PGC.2012.6458128](https://doi.org/10.1109/PGC.2012.6458128)

Seref Kalem, Peter Werner and Vadim Talalaev, “Infrared photoluminescence from Si/Ge nanowire grown wafers” Photonic Global Conference (PGC) 2012, 13-16 December, Singapore. doi: [10.1109/PGC.2012.6458108](https://doi.org/10.1109/PGC.2012.6458108)

S. Kalem, “Excited states dynamics in Si quantum pillars”, Hybrid Quantum Systems conference, 26-28 November 2012, Bad Honnef, Germany

S. Kalem, “Photoluminescence dynamics in nanostructured Si surfaces” TFD 29 International Physics Congress, 6-9 Eylül 2012, Bodrum

S. Kalem, NANO-TR VIII, Nanoscience and Nanotechnology Congress 25-29 June 2012, Ankara

S. Kalem, “Controllable Defects for Nanoelectronics”, NANOTR 7 Nanoscience and Nanotechnology Conference, Istanbul, 27 June-01 July 2011.

S. Kalem, P. Werner, M. Hagberg, B. Nilsson, V. Talalaev, Ö. Arthursson, H. Frederiksen, U. Södervall, “Microscopic Si whiskers” 36. International Conference on Micro & Nanoengineering MNE 2010, 15-22 September 2010, Genoa. Microelectronic Engineering 88 (2011) 2593. doi: [10.1016/j.mee.2011.02.072](https://doi.org/10.1016/j.mee.2011.02.072),

S. Kalem, P. Werner, V. Talalaev, Ö. Arthursson
“Photoluminescence enhancement from Si/Ge Quantum Structures” Proc. of 6th international conference on nanoscience and technology NANOTR-6, 15-18 June 2010, Cesme.

Seref Kalem, Örjan Arthursson, Igor Romandic
Formation of germanates on Germanium by chemical vapor treatment, Thin Solid Films 518, 2377 (2010)
<http://dx.doi.org/10.1016/j.tsf.2009.09.137> EMRS 2009 Spring Symp. I: Si and germanium issue for future CMOS devices

S. Kalem, “Self-organization of ammonium silicon hexafluoride complex low-dimensional structures on Silicon”, EMRS, Strasbourg, 2007.

S. Kalem,
Nonlinear optical absorption in Ge and GeOI, CADRES 2nd Germanium Workshop, Ghent, Belgium, 23 January 2007.

S. Kalem, E. Lavrov, G. Kissinger, H. Radamson, A. Nylandsted-Larsen and J. Weber, Defect studies in strain-relaxed Si_{1-x}Ge_x alloys, 2nd CADRES Workshop, Khalives, Crete, Greece, 7-11 September 2006.

S. Kalem,
Optical characterization of highly doped p-type and n-type Ge, 2nd CADRES Germanium Workshop, Olen, Belgium, 1-2 December 2005.

S. Kalem,
Cryptocrystal route to nanotechnology,
‘nanoSECURITY’ Workshop 2005: from basic research to applications, MPI-Halle, Germany, 24-25 October 2005.

S. Kalem
Surface modification of Silicon based substrates by exposure to vapor of etching solutions, Abstract Book, p.13, 1st CADRES Workshop on Defects Relevant to Engineering Advanced Silicon-based devices, Catania, Italy, 26-28, 2004.

S. Kalem
Deep Level Single Electron Source <http://ssqip.tudelft.nl/>
The International Conference on Solid State Quantum Information Processing, Abstract Book, p.137, December 15-18, 2003

S.Kalem

Sub-gap excited photoluminescence in III-V semiconductor heterostructures

NOEKS (Nonlinear Optical Excitation Kinetics in Semiconductors), 10-13 April 2000, Marburg, Germany

Seref Kalem and O. Yavuzcetin, An IR imaging system for remote sensing of chemicals, OSA Optics Infobase, Laser Applications to Chemical and Environmental Analysis, Santa Fe, New Mexico, February 11, 2000 ISBN:1-55752-626-5

S. Kalem and O. Yavuzcetin

Effect of Light exposure and ultrasound on the formation of porous silicon, Proc. of the Porous Semiconductor Science and Technology, Mallorca, 16-20 March 1998

S. Kalem, A. Curtis, Q.J. Hartmann, S.Thomas, D. Turnbull, H.Chuang, S.G.Bishop and GE Stillman
Defect suppression from the semiconductor heterointerfaces, Proc. 9th Int. Conference on InP and Related Materials, Swabisch Gmund, April 2, 1996, Germany.

http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=492292

S. Kalem

Design and process considerations of infrared multilayer notch filters

Technical digest Series 17, OSA, Mtg on Optical interference coatings, June5-9, 1995, Tucson, Arizona.

S. Kalem

Optical and structural properties of stain-etched Si,

6th International Conference on Microelectronics, ICM'94, September 5-7, 1994, Istanbul.

S. Kalem

Deep electronic levels in GaAs epilayers

6th International Conference on Microelectronics, ICM'94, September 5-7, 1994, Istanbul.

S. Kalem

SiGe ve GaAs mezoskopik yapılar da optik olayların incelenmesi

TFD 16. Ulusal Fizik Kongresi, Ayvalık, Bildiriler Kitabı, sayfa 27, 26-29 Ağustos 1996.

S. Kalem and J.Heremans

Magnetic field dependence of the Hall effect in InAs epilayers grown on GaAs, 13th General Conf. Abstracts of the Condensed Matter Division-European Physical Society, Vol.17A, p.1595, Regensburg, March 29-April 2, 1993, Germany.

S. Kalem

UHV-uyumlu bir ECR modülü: Düşük sıcaklık ve basınçta ince film büyütme ve yüzey aşındırma

TFD 14.Ulusal Fizik Kongresi, Lefkoşa, Bildiriler Kitabı, sayfa 5, 25-27 Ekim 1993.

S. Kalem, H.H.Lamb, P.K.McLarty, S.Bedge, Y.Ma, T.Yasuda, G.Lucovsky

Effects of surface cleaning on defect density at SiO₂/Si interfaces, Bulletin of the APS 37, 1836(1992).

S. Kalem, H.H. Lamb, G.A.Ruggles and G.Lucovsky

An electron cyclotron resonance(ECR) plasma module for low pressure, low damage etching and cleaning", Bull. of the APS 37, 1836(1992).

H.H. Lamb, **S. Kalem**, S.Bedge, T.Yasuda, Y.Ma, G.Lucovsky

Surface cleaning prior to formation of Si/SiO₂ interfaces by remote PECVD, Proc. of Mater. Res. Soc. Symp.,

75(1992).

B.Theys, **S. Kalem**, A. Lusson, J.Chevallier, C.Grattepain, M.Stutzman
Hydrogenation in InAs on GaAs:diffusion behavior, electrical and optical effects
Proc. of the 16th Int. Conf. on Defects in Semiconductors, Lehigh-Pennsylvania, July 22-26, 1991.

S. Kalem, S.A.Stockman, M.A.Plano, I.Szafranek, M.J. McCollum and G.E. Stillman, "Investigation of acceptor states in high-purity p-GaAs, Bulletin of APS 35, 413(1990).

T. Wojtowics, G.L. Yang, J.K. Furdyna and **S. Kalem**
Far infrared magneto-absorption in MBE-grown InAs films, Bull. of the American Physical Society 35, 344(1990).

S. Kalem and I.G. Austin
Gap-state spectroscopy of amorphous silicon nitride, Bulletin of the American Physical Society 34, 1537 (1989)

S. Kalem
Transport properties of InAs epilayers grown on GaAs, Bulletin of the American Physical Society 34, 1536(1989).

D. Huang, J.Chyi, **S.Kalem**, H.Morkoc,
Excitonic absorption in p-type modulation doped GaAs quantum wells, Bull. of Amer. Physical Society, Vol.33, 365(1988).

J.I.Chyi, **S. Kalem**, C.W. Litton, H.Morkoc
MBE growth and characterization of InSb and InAsSb on GaAs, Proc. of the Electronic Conf., Colorado, June 22-24, 1988.

S. Kalem
Optical studies of a-Si:H/a-SiN_x:H superlattices
Proc. of the 3rd Int. Conf. on Modulated Semiconductor Structures, J. de Physique C5, 191(1987)

S. Kalem, M.Hopkinson, T.M. Searle, I.G. Austin, W.E. Spear and P.G. LeComber
Gap state absorption and luminescence studies of a-Si:H/a-SiN:H and a-Si:H modulation doped multilayers
Proc.18th Int. Conf. Physics of Semiconductors 1, Engstrom, Stockholm, 1986, pp.747.

S. Kalem, T.M.Searle, I.G.Austin
Photothermal investigation of a-Si/SiN_x quantum wells
Solid State Physics Conf. Abstracts, Imperial College, 17-19 Dec. 1986, London, UK.

S. Kalem,
Amorphous silicon based solar cells
Proc. of the 3rd International Congress on New Energy Sources, Istanbul, 25-27 June, 1984.

S.A. Dallal, J.Chevallier, **S. Kalem** and J. Bourneix
"Correlation between electrical and vibrational properties of a-Si:H:Cl prepared by glow discharge",
Proc. of the 5th Int. Conf. on Physics of Non-Crystalline Solids, J. de Physique, C9, Suppl.12, Tome 43, 323(1982).

S. Kalem, J.Chevallier, S.Al Dallal and J.Bourneix
Infrared vibrational spectra of chlorinated and hydrogenated amorphous silicon
Proc. of the 9th Int. Conf. on Amorphous and Liquid Semiconductors, J. de Physique C4, suppl.10, Tome 42, 361(1981).