

Curriculum vitae

Research Assistant Fahrettin Sarcan



Contact information

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Degrees

2013- PhD. Physics, Istanbul University, Istanbul, Turkey 2010-2012 MSc. Physics, Istanbul University, Istanbul, Turkey;

Thesis Entitled "Investigation of Optical Properties and Electronic Transport Mechanisms in n and p- type Modulation Doped GaInNAs /GaAs Quantum Well Structures" [Supervised by Prof. Ayşe Erol]

2006-2010 BSc. Physics, Istanbul University, Istanbul, Turkey

Employment

2014- Research Assistant, Department of Physics, Istanbul University

2013- 2013 Specialist, SRP (Advanced Litography Laboratories, Istanbul University)

Scholarly activities

2013 Organizing Committee Member, COST Action MP0805 "Novel Gain Materials and Devices Based on III-V-N/Bi Compounds", September 2013

Research Areas

Design, fabrication and characterization of Low dimensional semiconductors and semiconductor devices, electronic transport and magneto-transport properties in low dimensional semiconductors, optical characterization, structural characterization (AFM and SEM), DNA-based optoelectronic devices.

Membership of Professional Societies

Turkish Physics Society

Computer skills

MS Office programs, Matlab, Mathematica, Origin Pro, SolidWorks, Web design tools (HTML language, Frontpage, Dreamweaver, Flash).

Research Projects

GaNAs-based Resonant Cavity Enhanced Photodetector with internal gain for 1.3 μ m (Scholar), TUBITAK, Project Grant: 120 k€, 2014

Investigation of electronic transport mechanisms and optical properties of n- and p-type modulation doped GaNAs/GaAs quantum well structures (Scholar), TUBITAK, Project Grant: 80 k€, 2011-2013

Advanced Lithographic Methods Laboratory, (Researcher), State Ministry of Turkish Republic, Project Grant: 1.4 M€, 2009-2012

COST MP0805, Novel Gain Materials and Devices based on III-V-N semiconductors, (Researcher), European Union, 2014

Publications

SCI Papers

Balkan N., Erol A., Sarcan F., Al-Ghuraibawi L., Nordin M., "Dilute nitride resonant cavity enhanced photodetector with internal gain for the $\sim 1.3 \mu\text{m}$ optical communications window", SUPERLATTICES AND MICROSTRUCTURES, vol.86, pp.467-471, 2015

Sarcan F., Nutku F., Dönmez Ö., Kuruoğlu F., Mutlu S., Erol A., et al., "Quantum Oscillations And Interference Effects In Strained N- And P-Type Modulation Doped GaNAs/GaAs Quantum Wells ", JOURNAL OF PHYSICS D-APPLIED PHYSICS, vol.48, pp.305108-305116, 2015

Nutku F., Dönmez Ö., Sarcan F., Erol A., Puustinen J., Arikani C.M., et al., "Negative and positive magnetoresistance in GaNAs/GaAs modulation-doped quantum well structures", Applied Physics A, vol.118, pp.823-829, 2015

Dönmez Ö., Sarcan F., Lisesivdin S.B., Vaughan M., Erol A., Güneş M., et al., "Analytic modeling of temperature dependence of 2D carrier mobility in asgrown and annealed GaNAs/GaAs quantum well structures", SEMICONDUCTOR SCIENCE AND TECHNOLOGY, vol.29, pp.125009125012, 2014

Sarcan F., Dönmez Ö., Kara K., Erol A., Akalin E., Arikani M.Ç., Makhoulfi H., Arnoult A., Fontaine C., "Bismuth-Induced Effects on Optical, Lattice Vibrational, And Structural Properties Of Bulk GaAs Alloys", NANOSCALE RESEARCH LETTERS, vol.9, pp.119-126, 2014

Dönmez Ö., Sarcan F., Lisesivdin S.B., Vaughan M., Erol A., Güneş M., Arikani M.Ç., Puustinen J., Guina M., "Analytic Modeling Of Temperature Dependence Of 2d Carrier Mobility In

Asgrown And Annealed GaInNAs/GaAs Quantum Well Structures", SEMICONDUCTOR SCIENCE AND TECHNOLOGY, vol.29, pp.125009-125012, 2014

Dönmez Ö., Sarcan F., Erol A., Gunes M., Arikan M.Ç., Puustinen J., Guina M., "Magnetotransport study on as-grown and annealed n- and p-type modulation-doped GaInNAs/GaAs strained quantum well structures", , Nanoscale Res. Lett., 9, 141, 2014

Sarcan F., Dönmez Ö., Kara K., Erol A., Akalin E., Arikan M.Ç., Makhloufi H., Arnoult A., Fontaine C., "Bismuth-induced effects on optical, lattice vibrational, and structural properties of bulk GaAsBi alloys", Nanoscale Res. Lett., 9, 119, 2014

Sarcan F., Dönmez Ö., Erol A., Güneş M., Arikan M. Ç., Puustinen J., Guina M., "Influence Of Nitrogen on Hole Effective Mass and Hole Mobility in p-Type Modulation Doped GaInNAs/GaAs Quantum Well Structures", Appl. Phys. Lett., 103, 082121, 2013

Ungan F., Yesilgul U., Sakiroglu S., Erol A., Kasapoglu E., Sari H., Sökmen İ., "Effects Of Indium And Nitrogen Mole Concentrations on The Optical Properties In A GaInNAs/GaAs Quantum Well Under The Intense Laser Field", Journal of luminescence, 134, 208, 2013

Sarcan F., Dönmez Ö., Güneş M., Erol A., Arikan M. Ç., Puustinen J., Guina M., "An Analysis Of Hall Mobility in As-Grown And Annealed n- and p-Type Modulation-Doped GaInNAs/GaAs Quantum Wells,", Nanoscale Res. Lett., 7, 529, 2012

Erol A., Akalin E., Sarcan F. , Dönmez Ö., Akyüz S., Arikan, M.Ç., Puustinen J., Guina M., "Excitation Energy-Dependent Nature of Raman Scattering Spectrum in GaInNAs/GaAs Quantum Well Structures", Nanoscale Res. Lett., 7, 656, 2012.

Conference Publications

Oral Presentations

Muhammetgulyyev Agageldi, Erbaş Göksel Ömer, SARCAN FAHRETTİN, KINACI BARIŞ, DÖNMEZ ÖMER, ÇELEBİ YAŞAR GÜRKAN, EROL AYŞE (2017). A comparison of characteristics of heterojunction pin solar cells based on dilute bismide and dilute nitride alloys. International Conference On Condensed Matter And Materialsscience, (Oral)

M.S. Nordin, F. Sarcan, M. Evans, A. Erol, A. Boland-Thoms & A.J. Vickers. GaInNAs (Sb) Multi Quantum Well Vertical Cavity Enhanced Photodetector presented at Semiconductor and Integrated Opto-Electronics Conference, SIOE'17, Cardiff University, 18th April 2017 – 20th April 2017. (Oral)

M.S. Nordin, F. Sarcan, A. Erol, A. Boland-Thoms & A.J. Vickers. Dilute Nitride MQW Vertical Cavity Enhanced Photodetector for 1.3µm Wavelength presented at A Workshop on the Physics of Optoelectronic Materials and Devices, University of Essex; 27th – 28th March 2017. (Oral)

Nutku Ferhat,Dönmez ÖMER,Çokduygulular Erman,SARCAN FAHRETTİN,KURUOĞLU FURKAN,MUTLU SELMAN,YILDIRIM SAFFETTİN,EROL AYŞE (2016). Investigation of ElectronicTransport Properties in GalnNAs GaAs Quantum Well Structures. Turkish Physical Society 32th International Physics Congress, (Oral)

Sarcan Fahrettin,Nordin Syahmi,EROL AYŞE,Vickers Anthony J (2016). GalnNAs BASED RESONANCE CAVITY ENHANCED PHOTODETECTOR FOR OPTICAL COMMUNICATION WAVELENGTH. Turkish Physical Society 32th International Physics Congress, (Oral)

Nordin Syahmi,SARCAN FAHRETTİN,EROL AYŞE,Boland Thoms Adrian,Vickers Anthony J (2016). Response Time of Dilute Nitride MQW Vertical Cavity Enhanced Photodetectors. 33. International Conference on the Physics of Semiconductors

Nutku Ferhat,Sarcan Fahrettin,Dönmez Ömer,Kuruoğlu Furkan,Mutlu Selman,Erol Ayşe,Yildirim Saffettin,Arikan Mehmet Çetin (2015). Temperature and electric field dependence of localization in modulation doped GalnNAs GaAs quantum well structures. 9th International Physics Conference of the Balkan Physical Union-BPU9 (Oral)

Nutku Ferhat,Sarcan Fahrettin,Dönmez Ömer,Kuruoğlu Furkan,Mutlu Selman,Erol Ayşe,Yildirim Saffettin,Arikan Mehmet Çetin (2015). Weak Localization and Weak Antilocalization in n and p type Modulation Doped GalnNAs GaAs Quantum Wells. İstanbul Üniversitesi Dünya Teknoloji, İnovasyon ve Girişimcilik Konferansı (Oral)

Naci Balkan,EROL AYŞE,SARCAN FAHRETTİN,Syahmi Nordin (2015). Dilute nitride resonant cavity enhanced photodetector with internal gain for operation at 1 286 um. SPIE Optics And Optoelectronics, Prague (Oral)

Naci Balkan,EROL AYŞE,Syahmi Nordin,SARCAN FAHRETTİN (2015). Design and Modelling of GalnNAs Resonant Cavity Enhanced Photodetector at 1 3 m. Semiconductor and Integrated opto-electronics Conference: SIOE'15 (Oral)

F. Sarcan, O. Donmez, M.P. Vaughan, A. Erol, M.Gunes**, M. C. Arikan, J. Puustinen***, M. Guina***, "Analytic modeling of temperature dependence of 2D carrier mobility in as-grown and annealed GalnNAs/GaAs quantum well structures", Turkish Physical Society 31th International Physics Congress, July 2014, Bodrum, Turkey

O. Donmez (*), K. Kara, F. Sarcan, E. Akalin, A. Erol, M. C. Arikan, C. Fontaine "Optical characterization of bulk GaAsBi and GaAs/GAAsBi quantum well structures" COST MP0805 Final Meeting-2013 24-26 September, Istanbul, Turkey

F. Sarcan, O. Donmez, M. Gunes, A. Erol, M.C Arikan " An analysis of scattering mechanisms in as-grown and annealed n- and p-type modulation doped GalnNAs/GaAs quantum wells" Turkish Physical Society 29th International Physics Congress, 5-8 September 2012, Bodrum, Turkey