

Analysis of barrier inhomogeneities of P-type Al/4H-SiC Schottky barrier diodes

Ziko, Mehadi Hasan; Koel, Ants; Rang, Toomas; Toompuu, Jana Silicon Carbide and Related Materials 2019 : Selected peer-reviewed papers from International Conference on Silicon Carbide and Related Materials 2019 (ICSCRM 2019), September 29 - October 4, 2019, Kyoto, Japan Materials science forum 2020 / p. 960-972 <https://doi.org/10.4028/www.scientific.net/MSF.1004.960>
[Conference proceedings at Scopus](#) [Article at Scopus](#)

Area efficient design and implementation of a novel divider circuit block = Uudne efektiivne jagamistehte riistvaraline realiseatsioon

Patankar, Udayan Sunil 2025 https://www.ester.ee/record=b5746970*est <https://digikogu.taltech.ee/et/Item/bada7a0d-f54f-48bb-844d-37e23ad8d029> <https://doi.org/10.23658/taltech.29/2025>

Area efficient hexadecimal divider circuit implementation based on USP-awadhoot division algorithm

Patankar, Udayan Sunil; Koel, Ants; Patankar, Sunil M.; Flores, Miguel E. IEEE International Conference on Engineering, Technology and Innovation (ICE/ITMC) 2021 / p. 1-8 <https://doi.org/10.1109/ICE/ITMC52061.2021.9570263>

Characterization of deep level traps in semiconductor structures using numerical experiments

Koel, Ants; Rang, Toomas; Rang, Galina Materials characterization VII 2015 / p. 253-261 : ill

Characterization of Interfaces Between the Metal Film and Silicon Carbide Semiconductor = Metallkontakti ja ränikarbiidi vahelise liidespinna karakteriseerimine

Ziko, Mehadi Hasan 2021 <https://digikogu.taltech.ee/et/Item/34be534c-63e8-4013-b271-eaf1a7cb22e7>
https://www.ester.ee/record=b5471196*est <https://doi.org/10.23658/taltech.52/2021>

Characterization of silicon carbide (SiC) and graphene-based novel semiconductor devices = Ränikarbiidil (SiC) ja grafeenil põhinevate uudsete pooljuhtstruktuuride karakteriseerimine

Rashid, Muhammad Haroon 2021 https://www.ester.ee/record=b5397240*est <https://digikogu.taltech.ee/et/Item/a64fd50e-125c-49ad-b0a6-6ad2e01b8bfa> <https://doi.org/10.23658/taltech.6/2021>

Characterization of the temperature dependent behavior of snappy phenomenon by the switching-off of GaAs power diode structures

Koel, Ants; Rang, Toomas; Rang, Galina Heat transfer XIII : simulation and experiments in heat and mass transfer 2014 / p. 439-449 : ill <https://doi.org/10.2495/HT140381> [Conference proceedings at Scopus](#) [Article at Scopus](#)

CNN-Transformer Hybrid Model Towards Automated Droplet Image Quality Assessment of Portable Imaging Flow Cytometer

Afrin, Fariha; Ndubuisi Ezechukwu, Dismas; Le Moullec, Yannick; Pardy, Tamas; Rang, Toomas; Koel, Ants IEEE EUROCON 2025 - 21st International Conference on Smart Technologies 2025 / 6 p <https://doi.org/10.1109/EUROCON64445.2025.11073334>

Compact empirical model for droplet generation in a Lab-on-Chip cytometry system

Pärnamets, Kaiser; Udal, Andres; Koel, Ants; Pardy, Tamas; Gyimah, Nafisat; Rang, Toomas IEEE Access 2022 / p. 127708-127717 <https://doi.org/10.1109/ACCESS.2022.3226623> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Compact multichannel device for differential impedance spectroscopy of microfluidic sensors [Online resource]

Ojarand, Jaan; Ehrminger, Robin Benjamin; Min, Mart; Koel, Ants BEC 2018 : 2018 16th Biennial Baltic Electronics Conference (BEC) : proceedings of the 16th Biennial Baltic Electronics Conference, October 8-10, 2018 2018 / 4 p.: ill
<http://doi.org/10.1109/BEC.2018.8600955>

Complementary multi guard ring JBS structures: numerical analysis

Koel, Ants; Rang, Toomas; Rang, Galina BEC 2010 : 2010 12th Biennial Baltic Electronics Conference : proceedings of the 12th Biennial Baltic Electronics Conference : Tallinn University of Technology, October 4-6, 2010, Tallinn, Estonia 2010 / p. 85-88 : ill

Complex division by Baudhayan triplet algorithm using novel state of the art USP-awadhoot divider

Patankar, Udayan Sunil; Koel, Ants; Patankar, Sunil M.; Flores, Miguel E. IEEE 4th Advanced Information Management, Communicates, Electronic and Automation Control Conference (IMCEC) 2021 / p. 1918-1922
<https://doi.org/10.1109/IMCEC51613.2021.9482010>

Computer aided simulation of power Scottky Diodes

Rang, Toomas; Koel, Ants; Udal, Andres Modeling, Simulation and Control 1985 / p. 1-13

Design and optimization of AlN based RF MEMS switches

Ziko, Mehadi Hasan; Koel, Ants IOP conference series : materials science and engineering 2018 / 012002 ; 9 p.: ill
<https://doi.org/10.1088/1757-899X/362/1/012002> [Conference proceedings at Scopus](#) [Article at Scopus](#) [Article at WOS](#)

Design of two stage high efficiency power amplifier in 0.13um technology for 2.4 GHz ISM band applications

Patankar, Udayan Sunil; Koel, Ants; Rang, Toomas Journal of Advanced Research in Dynamical and Control Systems 2018 / p.

Development of a low-cost, wireless smart thermostat for isothermal DNA amplification in lab-on-a-chip devices

Pardy, Tamas; Sink, Henri; Koel, Ants; Rang, Toomas Micromachines 2019 / art. 437, 13 p. : ill <https://doi.org/10.3390/mi10070437>
[Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Divider implementation based on USP-awadhoot division algorithm For area optimization

Patankar, Udayan Sunil; Koel, Ants; Patankar, Sunil M.; Flores, Miguel E. IEEE 4th Advanced Information Management, Communicates, Electronic and Automation Control Conference (IMCEC) 2021 / p. 1675-1682
<https://doi.org/10.1109/IMCEC51613.2021.9482132>

Division algorithms - from past to present chance to improve area time and complexity for digital applications

Patankar, Udayan Sunil; Flores, Miguel E.; **Koel, Ants** LAEDC 2020 : Latin American Electron Devices Conference, San José, Costa Rica, February 25-28, 2020 2020 / 4 p <https://doi.org/10.1109/LAEDC49063.2020.9073050>

Division Method And Circuit

Patankar, Udayan Sunil; Koel, Ants; Patankar, Sunil; Flores, Miguel E. 2022 <https://www.wipo.int>

Effects of the inclusion of armchair graphene nanoribbons on the electrical conduction properties of NN-heterojunction 4H-6H/SiC diodes

Rashid, Muhammad Haroon; Koel, Ants; Rang, Toomas Advanced Materials and Processing Technologies : 2nd International Conference on Sensors, Materials and Manufacturing (ICSMM 2018, November 19-21, 2018, Taiwan); International Conference on Materials Sciences and Nanomaterials (ICMSN 2018, July 11-13, 2018, United Kingdom) and the 2nd International Conference on Materials and Intelligent Manufacturing (ICMIM 2018, August 24-26, 2018, Japan) 2019 / p. 29–35 : ill
<https://doi.org/10.4028/www.scientific.net/MSF.962.29> [Conference proceeding at Scopus](#) [Article at Scopus](#)

Embedded blur-free single-image acquisition pipeline for droplet microfluidic imaging flow cytometry (IFC)

Afrin, Fariha; Pärnamets, Kaiser; Le Moullec, Yannick; Udal, Andres; Koel, Ants; Pardy, Tamas; Rang, Toomas IEEE Access 2024 / p. 92431-92441 <https://doi.org/10.1109/ACCESS.2024.3421637> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

First principles simulations of phenol and methanol detector based on pristine graphene nanosheet and armchair graphene nanoribbons

Rashid, Muhammad Haroon; Koel, Ants; Rang, Toomas Sensors 2019 / art. 2731, 14 p. : ill <https://doi.org/10.3390/s19122731>
[Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Generalized analytical model for SiC polytypic heterojunctions

Rang, Toomas; Tabun, Indrek; Rang, Galina; Koel, Ants Estonian journal of engineering 2011 / 2, p. 151-157 : ill

Investigation of barrier inhomogeneities and electronic transport on Al-Foil/p-Type-4H-SiCSchottky barrier Diodes using diffusion welding

Ziko, Mehadi Hasan; Koel, Ants; Rang, Toomas; Rashid, Muhammad Haroon Crystals 2020 / p. 636-647
<https://doi.org/10.3390/cryst10080636> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Microheating solution for molecular diagnostics devices = Mikrosoojendamine molekulaardiagnostika seadistes

Pardy, Tamas 2018 <https://digi.lib.ttu.ee/i/?9249> https://www.ester.ee/record=b4759173*est

Modeling and simulations of 4H-SiC/6H-SiC/4H-SiC single quantum-well light emitting diode using diffusion bonding technique

Rashid, Muhammad Haroon; Koel, Ants; Rang, Toomas Micromachines 2021 / art. 1499 <https://doi.org/10.3390/mi12121499> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Moving average filter block implementation using USP-Awadhoot divider

Patankar, Udayan Sunil; Flores, Miguel E.; **Koel, Ants;** Patankar, Sunil 2024 19th Biennial Baltic Electronics Conference (BEC) 2024 / 6 p <https://doi.org/10.1109/BEC61458.2024.10737938> [Conference proceedings at Scopus](#) [Article at Scopus](#) [Article at WOS](#)

Multichannel electrical impedance spectroscopy analyzer with microfluidic sensors

Ojarand, Jaan; Min, Mart; Koel, Ants Sensors 2019 / art. 1891, 28 p. : ill <https://doi.org/10.3390/s19081891> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Nano- and Micro-Scale simulations of Ge/3C-SiC and Ge/4H-SiC NN-heterojunction diodes

Rashid, Muhammad Haroon; Koel, Ants; Rang, Toomas Silicon Carbide and Related Materials 2019 : 18th International Conference on Silicon Carbide and Related Materials 2019 (ICSCRM 2019), Kyoto, Japan, September 29 - October 4, 2019 Materials science forum 2020 / p. 490-496 <https://doi.org/10.4028/www.scientific.net/MSF.1004.490> [Conference proceedings at Scopus](#) [Article at Scopus](#)

Nano and micro-scale simulations of Si/4H-SiC and Si/3C-SiC NN-heterojunction diodes

Rashid, Muhammad Haroon; Koel, Ants; Rang, Toomas Silicon Carbide and Related Materials 2018 : 12th European Conference on Silicon Carbide and Related Materials (ECSCRM 2018) : Selected, peer reviewed papers from the European Conference on Silicon Carbide and Related Materials (ECSCRM 2018), September 2-6, 2018, Birmingham, UK 2019 / p. 357–361 <https://doi.org/10.4028/www.scientific.net/MSF.963.357> [Conference proceeding at Scopus](#) [Article at Scopus](#)

Nanoscale and microscale simulations of N-N junction heterostructures of 3C-4H silicon carbide

Rashid, Muhammad Haroon; Koel, Ants; Rang, Toomas; Gähwiler, Reto; Grosberg, Martin; Jõemaa, Rauno Materials and contact characterisation VIII 2017 / p. 235-248 : ill <https://doi.org/10.2495/MC170241> [Conference proceedings at Scopus](#) [Article at Scopus](#)

Non-destructive eddy current measurements for silicon carbide heterostructure analysis

Sahakyan, Armen; Koel, Ants; Rang, Toomas Materials and contact characterisation VIII 2017 / p. 49-60 : ill <https://doi.org/10.2495/MC170061> [Conference proceedings at Scopus](#) [Article at Scopus](#)

Novel data dependent divider circuit block implementation for complex division and area critical applications

Patankar, Udayan Sunil; Flores, Miguel E.; Koel, Ants Scientific reports 2023 / art. 3027, 28 p. : ill <https://doi.org/10.1038/s41598-023-28343-3> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Numerical analysis of the influence of deep energy level traps in SiC Schottky structures

Koel, Ants; Rang, Toomas; Rang, Galina High performance structure and materials. VI 2012 / p. 439-448 : ill

Numerical simulation of P-type Al/4H-SiC Schottky barrier diodes [Online resource]

Ziko, Mehadi Hasan; Koel, Ants; Rang, Toomas BEC 2018 : 2018 16th Biennial Baltic Electronics Conference (BEC) : proceedings of the 16th Biennial Baltic Electronics Conference, October 8-10, 2018 2018 / 4 p.: ill <https://doi.org/10.1109/BEC.2018.8600976>

Numerical simulations for reverse recovery process investigations of LPE GaAs power diodes

Koel, Ants; Rang, Toomas; Voitovitš, Viktor; Toompuu, Jana BEC 2012 : 2012 13th Biennial Baltic Electronics Conference : proceedings of the 13th Biennial Baltic Electronics Conference : October 3-5, 2012, Tallinn, Estonia 2012 / p. 39-42 : ill

Numerical simulations of wideband SiC N-N heterostructure diode

Patankar, Udayan Sunil; Koel, Ants; Pardy, Tamas LAEDC 2020 : Latin American Electron Devices Conference, San José, Costa Rica, February 25-28, 2020 2020 / 4 p <https://doi.org/10.1109/LAEDC49063.2020.9073489>

Open source hardware cost-effective imaging sensors for high-throughput droplet microfluidic systems

Pärnamets, Kaiser; Koel, Ants; Pardy, Tamas; Rang, Toomas Proceedings of 26th International Conference : ELECTRONICS 2022 2022 / 6 p <https://doi.org/10.1109/IEEECONF55059.2022.9810383>

Optical detection methods for droplet microfluidic applications = Optilised tuvastusmeetodid tilkade mikrofluidiliste rakenduste jaoks

Pärnamets, Kaiser 2023 <https://doi.org/10.23658/taltech.31/2023> <https://digikogu.taltech.ee/et/Item/ffb85150-fb85-4a7c-b130-0d7f2c3b7fb5> https://www.ester.ee/record=b5569973*est

Optical detection methods for high-throughput fluorescent droplet microflow cytometry

Pärnamets, Kaiser; Pardy, Tamas; Koel, Ants; Rang, Toomas; Scheler, Ott; Le Moullec, Yannick; Afrin, Fariha Micromachines 2021 / art. 345, 20 p. : ill <https://doi.org/10.3390/mi12030345> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Optical dynamics of copper-doped cadmium sulfide (CdS) and zinc sulfide (ZnS) quantum-dots core/shell nanocrystals

Rashid, Muhammad Haroon; Koel, Ants; Rang, Toomas; Nasir, Nadeem; Sabir, Nadeem; Ameen, Faheem; Rasheed, Abher Nanomaterials 2022 / art. 2277 <https://doi.org/10.3390/nano12132277> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Optimum electromagnetic modelling of RF MEMS switches

Ziko, Mehadi Hasan; Koel, Ants Elektronika ir elektrotehnika = Electronics and electrical engineering 2018 / p. 46-50 : ill <https://doi.org/10.5755/j01.eie.24.5.21842> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Phenol and methanol detector based on pristine graphene nano-sheet: a first principles study [Online resource]

Rashid, Muhammad Haroon; Koel, Ants; Rang, Toomas BEC 2018 : 2018 16th Biennial Baltic Electronics Conference (BEC) : proceedings of the 16th Biennial Baltic Electronics Conference, October 8-10, 2018 2018 / 4 p.: ill <https://doi.org/10.1109/BEC.2018.8600982>

Review of - SiC wide-bandgap heterostructure properties as an alternate semiconductor material

Patankar, Udayan Sunil; Rajput Priti, J.; Koel, Ants; Nitnaware, V.N. International Conference on Inventive Research in Material Science and Technology, ICIRMCT 2018 : March 23-24, 2018 2018 / art. 020011 <https://doi.org/10.1063/1.5038690> [Conference proceedings at Scopus](#) [Article at Scopus](#) [Article at WOS](#)

Review of basic classes of dividers based on division algorithm

Patankar, Udayan Sunil; Koel, Ants IEEE Access 2021 / p. 23035-23069 <https://doi.org/10.1109/ACCESS.2021.3055735> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

SEU study of wideband heterostructure diode for particle detection

Patankar, Udayan Sunil; Koel, Ants 2021 IEEE International Conference on Consumer Electronics (ICCE) 2021 / 4 p. : ill <https://doi.org/10.1109/ICCE50685.2021.9427613> [Conference Proceedings at Scopus](#) [Article at Scopus](#) [Article at WOS](#)

Simulation of deep energy traps to explain the VAC temperature dependence anomaly of diffusion welded Schottky contacts

Koel, Ants; Rang, Toomas; Rang, Galina ICSCRM2011 : Cleveland Ohio, USA, September 11-16, 2011 : abstracts 2011 / p. 340 : ill

Simulations of benzene and hydrogen-sulfide gas detector based on single-walled carbon nanotube over intrinsic 4H-SiC substrate

Rashid, Muhammad Haroon; Koel, Ants; Rang, Toomas; Ziko, Mehadi Hasan Micromachines 2020 / art. 453, 13 p. : ill <https://doi.org/10.3390/mi11050453> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Simulations of graphene nanoribbon field effect transistor for the detection of propane and butane gases : a first principles study

Rashid, Muhammad Haroon; Koel, Ants; Rang, Toomas Nanomaterials 2020 / art. 98 <https://doi.org/10.3390/nano10010098> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Simulations of heterostructures based on 3C-4H and 6H-4H silicon carbide polytypes

Rashid, Muhammad Haroon; Koel, Ants; Rang, Toomas Silicon carbide and related materials 2017 : ICSCRM 2017 : selected, peer reviewed papers from the 2017 International Conference on Silicon Carbide and related materials, September 17-22, 2017, Washington, DC, USA 2018 / p. 302-305 : ill <https://doi.org/10.4028/www.scientific.net/MSF.924.302> [Conference Proceedings at Scopus](#) [Article at Scopus](#)

Simulations of propane and butane gas sensor based on pristine armchair graphene nanoribbon

Rashid, Muhammad Haroon; Koel, Ants; Rang, Toomas IOP conference series : materials science and engineering 2018 / art. 012001, 8 p <https://doi.org/10.1088/1757-899X/362/1/012001> [Conference proceedings at Scopus](#) [Article at Scopus](#) [Article at WOS](#)

Simulations of wide bandgap SiC N-N heterostructure diode

Patankar, Udayan Sunil; Koel, Ants; Pardy, Tamas 2020 IEEE International Conference on Consumer Electronics (ICCE), Las Vegas, NV, USA, January 4-6, 2020 2020 / 4 p <https://doi.org/10.1109/ICCE46568.2020.9043130>

Study of estimation based functional iteration approximation dividers

Patankar, Udayan Sunil; Flores, Miguel E.; Koel, Ants ICCE-2021 IEEE International Conference on Consumer Electronics, CES 2021 / p. 1-4 <https://doi.org/10.1109/ICCE50685.2021.9427657> [Conference Proceedings at Scopus](#) [Article at Scopus](#) [Article at WOS](#)

The permeable base transistor

Koel, Ants; Nilsson, H.H.; Masszi, F.; Rang, Toomas BEC'98 : the 6th Biennial Conference on Electronics and Microsystems Technology, October 7-9, 1998, Tallinn, Estonia : proceedings 1998 / p. 287-290: ill

We will rock you! : [TAMi kevadkontsertidest]

Koel, Ants Mente et Manu 2005 / 21. sept., TAM 60 : sügis 2005, lk. 2 : fot https://www.ester.ee/record=b1242496*est

Кризис в сфере образования: эстонские ученые бьют тревогу

Stolitsa.ee 2023 [Кризис в сфере образования: эстонские ученые бьют тревогу](#)

Модель ключа на базе ВТСП

Rang, Toomas; Koel, Ants Tallinna Tehnikaülikooli Toimetised 1990 / lk. 109-116: ill

Обращение 3000 ученых: вся эстонская система образования разваливается

rus.postimees.ee 2023 [Обращение 3000 ученых: вся эстонская система образования разваливается](#)