

Letters

FullNovember 2018

Broadband UV-assisted thermal annealing of low-*k* silicon carbonitride films using a C-rich silazane precursor

Wei-Yuan Chang, Hau-Ting Chung, Yi-Chang Chen, and Jihperng Leu

Journal of Vacuum Science & Technology B **36**, 060601 (2018); <https://doi.org/10.1116/1.5063294>

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Review Articles

FullNovember 2018

Future prospects of fluoride based upconversion nanoparticles for emerging applications in biomedical and energy harvesting

Surya P. Tiwari, Sachin K. Maurya, Ram S. Yadav, Abhishek Kumar, Vinod Kumar, Marie-France Joubert, and Hendrik C. Swart

Journal of Vacuum Science & Technology B **36**, 060801 (2018); <https://doi.org/10.1116/1.5044596>

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Electronic & Optoelectronic Materials, Devices & Processing

FullNovember 2018

Effect of surface treatments on electrical properties of β -Ga₂O₃

Jiancheng Yang, Zachary Sparks, Fan Ren, Stephen J. Pearton, and Marko Tadjer

Journal of Vacuum Science & Technology B **36**, 061201 (2018); <https://doi.org/10.1116/1.5052229>

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Enhanced cracking in Si/B-doped Si_{0.70}Ge_{0.30}/Si heterostructures via hydrogen trapping effect

Xing Wei, Zhongying Xue, Yongwei Chang, Jiurong Li, Gang Wang, Da Chen, and Qinglei Guo

Journal of Vacuum Science & Technology B **36**, 061202 (2018); <https://doi.org/10.1116/1.5044215>

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Dual-band ultraviolet photodetectors comprising nanostructured MgZnO on ZnO films

Ching-Ting Lee, Tzu-Shun Lin, Hsin-Ying Lee, and Day-Shan Liu

Journal of Vacuum Science & Technology B **36**, 061203 (2018); <https://doi.org/10.1116/1.5048677>

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FullNovember 2018

TEOS layers for low temperature processing of group IV optoelectronic devices

Simone Assali, Anis Attiaoui, Samik Mukherjee, Jérôme Nicolas, and Oussama Moutanabbir

Journal of Vacuum Science & Technology B **36**, 061204 (2018); <https://doi.org/10.1116/1.5047909>

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FullNovember 2018

Solid-source doping by using phosphosilicate glass into p-type bulk Si (100) substrate: Role of the capping SiO₂ barrier

Yoshiaki Kikuchi, Antony Peter, Bartłomiej Jan Pawlak, An De Keersgieter, Pierre Eyben, Naoto Horiguchi, and Anda Mocuta

Journal of Vacuum Science & Technology B **36**, 061205 (2018); <https://doi.org/10.1116/1.5053455>

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Effect of carbon doping on threshold voltage and mobility of In-Si-O thin-film transistors

Kazunori Kurishima, Toshihide Nabatame, Nobuhiko Mitoma, Takio Kizu, Shinya Aikawa, Kazuhito Tsukagoshi, Akihiko Ohi, Toyohiro Chikyow, and Atsushi Ogura

Journal of Vacuum Science & Technology B **36**, 061206 (2018); <https://doi.org/10.1116/1.5039665>

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FullNovember 2018

Band alignment of atomic layer deposited SiO₂ on (010) (Al_{0.14}Ga_{0.86})₂O₃

Chaker Fares, F. Ren, Eric Lambers, David C. Hays, B. P. Gila, and S. J. Pearton

Journal of Vacuum Science & Technology B **36**, 061207 (2018); <https://doi.org/10.1116/1.5052620>

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Effects of Ar⁺ etching of Cu₂ZnSnSe₄ thin films: An x-ray photoelectron spectroscopy and photoluminescence study

Michael V. Yakushev, Mikhail A. Sulimov, Ekaterina Skidchenko, Jose Márquez-Prieto, Ian Forbes, Paul R. Edwards, Mikhail V. Kuznetsov, Vadim D. Zhivulko, Olga M. Borodavchenko, Alexander V. Mudryi, Juri Krustok, and Robert W. Martin

Journal of Vacuum Science & Technology B **36**, 061208 (2018); <https://doi.org/10.1116/1.5050243>

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FullNovember 2018

Gaussian distribution in current-conduction mechanism of (Ni/Pt) Schottky contacts on wide bandgap AlInGaN quaternary alloy

Engin Arslan, S. emsettin Altındal, Sertaç Ural, Ömer Ahmet Kayal, Mustafa Öztürk, and Ekmel Özbay

Journal of Vacuum Science & Technology B **36**, 061209 (2018); <https://doi.org/10.1116/1.5045259>

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FullNovember 2018

Enhancing the focused ion beam etch rate of Ag films by Joule heating

Takahiro Sasaki, and Hironori Tohmyoh

Journal of Vacuum Science & Technology B **36**, 061210 (2018); <https://doi.org/10.1116/1.5054991>

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Effects of oxygen-inserted layers and oxide capping layer on dopant activation for the formation of ultrashallow p-n junctions in silicon

Xi Zhang, Daniel Connelly, Hideki Takeuchi, Marek Hytha, Robert J. Mears, Leonard M. Rubin, and Tsu-Jae King Liu

Journal of Vacuum Science & Technology B **36**, 061211 (2018); <https://doi.org/10.1116/1.5062366>

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Lithography

FullNovember 2018

Nanostructures prepared by vacuum-line deposition of organosilanes through a colloidal mask

Susan D. Verberne-Sutton, Zorabel M. LeJeune, Sean Hill, Jason P. LeJeune, and Jayne C. Garno

Journal of Vacuum Science & Technology B **36**, 061601 (2018); <https://doi.org/10.1116/1.5051350>

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Nanometer Science & Technology

FullNovember 2018

Development of ultralight nanocellulose magnets using ultrasonic agitation

Derek T. Bradley, Eric Clausen, Paul M. Shand, Matthew Fleming, and Timothy E. Kidd

Journal of Vacuum Science & Technology B **36**, 061801 (2018); <https://doi.org/10.1116/1.5049814>

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FullNovember 2018

Prediction of surface topography due to finite pixel spacing in focused ion beam milling of circular holes and trenches

Alexander V. Rumyantsev, and Nikolay I. Borgardt

Journal of Vacuum Science & Technology B **36**, 061802 (2018); <https://doi.org/10.1116/1.5047107>

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FullNovember 2018

Magnetic nanotubes obtained from atomic layer deposition coated electrospun nanofibers

Alejandro Pereira, Juan Escrig, Juan Luis Palma, Carol López de Dicastillo, Cristian Patiño, and María José Galotto

Journal of Vacuum Science & Technology B **36**, 061803 (2018); <https://doi.org/10.1116/1.5058706>

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Microelectronic & Nanoelectronic Devices

FullNovember 2018

Analysis of conductive filament density in resistive random access memories: a 3D kinetic Monte Carlo approach

Samuel Aldana, Pedro García-Fernández, Rocío Romero-Zalaz, Francisco Jiménez-Molinos, Francisco Gómez-Campos, and Juan Bautista Roldán

Journal of Vacuum Science & Technology B **36**, 062201 (2018); <https://doi.org/10.1116/1.5049213>

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Single electron transistors with e-beam evaporation of SiO₂ tunnel barriers

Matthew J. Filmer, Gregory L. Snider, and Alexei O. Orlov

Journal of Vacuum Science & Technology B **36**, 062202 (2018); <https://doi.org/10.1116/1.5050379>

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Silver-doped tin oxide for electrical property enhancement in p-type channel thin film transistor

An Hoang-Thuy Nguyen, Manh-Cuong Nguyen, Hyungmin Ji, Jonggyu Cheon, Kyoungmun Yu, Jinhyun Kim, Sangwoo Kim, Seongyong Cho, Rino Choi, Hoai Phuong Pham, and Quang Trung Tran

Journal of Vacuum Science & Technology B **36**, 062203 (2018); <https://doi.org/10.1116/1.5051419>

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Plasmonics

FullNovember 2018

Effects of annular-cylindrical combined channel Hall thruster length on the discharge characteristics

Yongjie Ding, Hongbo Su, Boyang Jia, Hong Li, Liqiu Wei, Peng Li, Hezhi Sun, and Daren Yu

Journal of Vacuum Science & Technology B **36**, 062601 (2018); <https://doi.org/10.1116/1.5037740>

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Spintronics and Magnetic Devices

FullNovember 2018

Effect of magnetic field directionality on discharging characteristics of Hall effect thruster with azimuthal diversion rail

Yongjie Ding, Hongbo Su, Lei Wang, Hong Li, Liqui Wei, Boyang Jia, Hezhi Sun, Peng Li, and Daren Yu

Journal of Vacuum Science & Technology B **36**, 062801 (2018); <https://doi.org/10.1116/1.5037215>

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Measurement and Characterization

FullNovember 2018

Interaction of hydrogen with hafnium dioxide grown on silicon dioxide by the atomic layer deposition technique

Vladimir Kolkovsky, Sebastian Scholz, Valery Kolkovsky, Jan-Uwe Schmidt, and Rene Heller

Journal of Vacuum Science & Technology B **36**, 062901 (2018); <https://doi.org/10.1116/1.5045634>

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FullNovember 2018

Tutorial on interpreting x-ray photoelectron spectroscopy survey spectra: Questions and answers on spectra from the atomic layer deposition of Al₂O₃ on silicon

Dhruv Shah, Dhananjay I. Patel, Tuhin Roychowdhury, G. Bruce Rayner, Noel O'Toole, Donald R. Baer, and Matthew R. Linfood

Journal of Vacuum Science & Technology B **36**, 062902 (2018); <https://doi.org/10.1116/1.5043297>

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FullNovember 2018

Reactivity studies and structural properties of Al on compound semiconductor surfaces

Wendy L. Sarney, Stefan P. Svensson, Kaushini S. Wickramasinghe, Joseph Yuan, and Javad Shabani
Journal of Vacuum Science & Technology B **36**, 062903 (2018); <https://doi.org/10.1116/1.5053987>

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FullNovember 2018

Structural characterization of tantalum nitride films as wet etch stop layer in advanced multiwork function metal gate MOSFETs

Petra Mennell, Hamed Parvaneh, Zeynel Bayindir, Dong Hun Kang, Frieder Baumann, Anita Madan, Abner Bello, Ashawaraya Shalini, and Mark Klare

Journal of Vacuum Science & Technology B **36**, 062904 (2018); <https://doi.org/10.1116/1.5044633>

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Papers from the 62nd International Conference on Electron, Ion, and Photon Beam Technology and Nanofabrication (62nd EIPBN 2018)

EIPBN Review Articles

FullNovember 2018

Review Article: Review of electrohydrodynamical ion sources and their applications to focused ion beam technology

Jacques Gierak, Paul Mazarov, Lars Bruchhaus, Ralf Jede, and Lothar Bischoff

Journal of Vacuum Science & Technology B **36**, 06J101 (2018); <https://doi.org/10.1116/1.5047150>

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FullNovember 2018

Atomic force microscope integrated with a scanning electron microscope for correlative nanofabrication and microscopy

Ivo W. Rangelow, Marcus Kaestner, Tzvetan Ivanov, Ahmad Ahmad, Steve Lenk, Claudia Lenk, Elshad Guliyev, Alexander Reum, Martin Hofmann, Christoph Reuter, and Mathias Holz

Journal of Vacuum Science & Technology B **36**, 06J102 (2018); <https://doi.org/10.1116/1.5048524>

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Advanced Lithography

FullNovember 2018

Improving the resolution and throughput of achromatic Talbot lithography

Dimitrios Kazazis, Li-Ting Tseng, and Yasin Ekinici

Journal of Vacuum Science & Technology B **36**, 06J501 (2018); <https://doi.org/10.1116/1.5048506>

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FullNovember 2018

Optimized structure of standard sample with programmed defects for pattern inspection using electron beams

Susumu Iida, and Takayuki Uchiyama

Journal of Vacuum Science & Technology B **36**, 06J502 (2018); <https://doi.org/10.1116/1.5048047>

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FullNovember 2018

Unbiased roughness measurements: Subtracting out SEM effects, part 2

Gian F. Lorusso, Vito Rutigliani, Frieda Van Roey, and Chris A. Mack

Journal of Vacuum Science & Technology B **36**, 06J503 (2018); <https://doi.org/10.1116/1.5046477>

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FullNovember 2018

Progress in metal organic cluster EUV photoresists

Kazunori Sakai, Hong Xu, Vasiliki Kosma, Emmanuel P. Giannelis, and Christopher K. Ober

Journal of Vacuum Science & Technology B **36**, 06J504 (2018); <https://doi.org/10.1116/1.5050942>

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Biomedical Devices

FullNovember 2018

Investigating the interplay of lateral and height dimensions influencing neuronal processes on nanogrooves

Alex J. Bastiaens, Sijia Xie, and Regina Luttgé

Journal of Vacuum Science & Technology B **36**, 06J801 (2018); <https://doi.org/10.1116/1.5048069>

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Charged Particle Optics

FullNovember 2018

Brightness measurements of the nano-aperture ion source

Leon van Kouwen, and Pieter Kruit

Journal of Vacuum Science & Technology B **36**, 06J901 (2018); <https://doi.org/10.1116/1.5048054>

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FullNovember 2018

Variations of the field of view depending on the Si deflector shape in a microcolumn

Hyung Woo Kim, Young Bok Lee, Dae-Wook Kim, Seungjoon Ahn, Tae Sik Oh, Ho Seob Kim, and Young Chul Kim

Journal of Vacuum Science & Technology B **36**, 06J902 (2018); <https://doi.org/10.1116/1.5048128>

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E Beam Lithography

FullNovember 2018

Fabrication of astronomical x-ray reflection gratings using thermally activated selective topography equilibration

Jake A. McCoy, Randall L. McEntaffer, and Chad M. Eichfeld

Journal of Vacuum Science & Technology B **36**, 06JA01 (2018); <https://doi.org/10.1116/1.5048197>

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FullNovember 2018

Statistical comparison of field height correction by Z-stage movement versus height-correction hardware in a modern electron-beam lithography tool

Michael P. Young

Journal of Vacuum Science & Technology B **36**, 06JA02 (2018); <https://doi.org/10.1116/1.5048117>

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FullNovember 2018

Effects of lithographic parameters in massively parallel electron-beam systems

Soomin Moon, Soo-Young Lee, Jin Choi, Seom-Beom Kim, and Chan-Uk Jeon

Journal of Vacuum Science & Technology B **36**, 06JA03 (2018); <https://doi.org/10.1116/1.5048084>

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FullNovember 2018

Stochastic simulation of pattern formation in electron beam lithography

Masaaki Yasuda, Masanori Koyama, Masamitsu Shirai, Hiroaki Kawata, and Yoshihiko Hirai

Journal of Vacuum Science & Technology B **36**, 06JA04 (2018); <https://doi.org/10.1116/1.5049757>

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On the trends and application of pattern density dependent isofocal dose of positive resists for 100 keV electron beam lithography

Gerald G. Lopez, Glen de Villafranca, Mohsen Azadi, Meredith G. Metzler, Kevin Lister, Michael Labella, Chad Eichfeld, Nikola Belic, and Ulrich Hofmann

Journal of Vacuum Science & Technology B **36**, 06JA05 (2018); <https://doi.org/10.1116/1.5048206>

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FullNovember 2018

Designing an anisotropic noise filter for measuring critical dimension and line edge roughness from scanning electron microscope images

Hyesung Ji, and Soo-Young Lee

Journal of Vacuum Science & Technology B **36**, 06JA06 (2018); <https://doi.org/10.1116/1.5048077>

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Imaging and Characterization

FullNovember 2018

***In situ* femtosecond pulse laser ablation for large volume 3D analysis in scanning electron microscope systems**

Steven Jeffrey Randolph, Jorge Filevich, Aurelien Botman, Renae Gannon, Chad Rue, and Marcus Straw

Journal of Vacuum Science & Technology B **36**, 06JB01 (2018); <https://doi.org/10.1116/1.5047806>

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Materials for Advanced Patterning

FullNovember 2018

Influence of tetramethylammonium hydroxide on niobium nitride thin films

Emily Toomey, Marco Colangelo, Navid Abedzadeh, and Karl K. Berggren

Journal of Vacuum Science & Technology B **36**, 06JC01 (2018); <https://doi.org/10.1116/1.5047427>

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FullNovember 2018

Phenol-functionalized polymerization control additives for negative tone epoxide crosslinking molecular resists

Hannah Narcross, Brandon L. Sharp, Peter J. Ludovice, Laren M. Tolbert, and Clifford L. Henderson

Journal of Vacuum Science & Technology B **36**, 06JC02 (2018); <https://doi.org/10.1116/1.5057442>

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Nanoimprint

FullNovember 2018

Fabrication and replication of re-entrant structures by nanoimprint lithography methods

Nikolaos Kehagias, Achille Francone, Markus Guttman, Frank Winkler, Ariadna Fernández, and Clivia M. Sotomayor Torres

Journal of Vacuum Science & Technology B **36**, 06JF01 (2018); <https://doi.org/10.1116/1.5048241>

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Visualization of organic/inorganic hybridization of UV-cured films with trimethylaluminum by scanning transmission electron microscopy and energy dispersive x-ray spectroscopy

Masaru Nakagawa, Takuya Uehara, Yuki Ozaki, Takahiro Nakamura, and Shunya Ito

Journal of Vacuum Science & Technology B **36**, 06JF02 (2018); <https://doi.org/10.1116/1.5047822>

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Nanophotonics

FullNovember 2018

Moth-eye antireflection nanostructure on glass for CubeSats

Yaoze Liu, Mohammad Soltani, Ripon Kumar Dey, Bo Cui, Regina Lee, and Hugh Podmore

Journal of Vacuum Science & Technology B **36**, 06JG01 (2018); <https://doi.org/10.1116/1.5050986>

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NEMS/MEMS

FullNovember 2018

Electrospun charge transport structures for hybrid perovskite solar cells

John P. Murphy, Molly C. Brockway, Jessica M. Andriolo, and Jack L. Skinner

Journal of Vacuum Science & Technology B **36**, 06JH01 (2018); <https://doi.org/10.1116/1.5049434>

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Quantum Electronics

FullNovember 2018

Preparation of Ga-terminated negative electron affinity-GaAs (100) surface by HCl-isopropanol treatment for nanoanalysis by scanning tunneling microscopy

Ryutaro Fukuzoe, Masayuki Hirao, Daichi Yamanaka, Youta Iwabuchi, Hokuto Iijima, and Takashi Meguro

Journal of Vacuum Science & Technology B **36**, 06JK01 (2018); <https://doi.org/10.1116/1.5048060>

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Analysis of negative electron affinity InGaN photocathode by temperature-programed desorption method

Masahiro Kashima, Daiki Sato, Atsushi Koizumi, Tomohiro Nishitani, Yoshio Honda, Hiroshi Amano, Hokuto Iijima, and Takashi Meguro

Journal of Vacuum Science & Technology B **36**, 06JK02 (2018); <https://doi.org/10.1116/1.5048061>

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Scanning Probe Lithography

FullNovember 2018

Theoretical investigation of the enhancement factor for a single field emitter in close proximity to the counter electrode

Steve Lenk, Claudia Lenk, and Ivo W. Rangelow

Journal of Vacuum Science & Technology B **36**, 06JL01 (2018); <https://doi.org/10.1116/1.5046940>

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FullNovember 2018

Field emission from diamond nanotips for scanning probe lithography

Martin Hofmann, Claudia Lenk, Tzvetan Ivanov, Ivo W. Rangelow, Alexander Reum, Ahmad Ahmad, Mathias Holz, and Eberhard Manske

Journal of Vacuum Science & Technology B **36**, 06JL02 (2018); <https://doi.org/10.1116/1.5048193>

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FullNovember 2018

Experimental study of field emission from ultrasharp silicon, diamond, GaN, and tungsten tips in close proximity to the counter electrode

Claudia Lenk, Steve Lenk, Mathias Holz, Elshad Guliyev, Martin Hofmann, Tzvetan Ivanov, Ivo W. Rangelow, Mahmoud Behzadirad, Ashwin K. Rishinaramangalam, Daniel Feezell, and Tito Busani

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Sharp GaN nanowires used as field emitter on active cantilevers for scanning probe lithography

Claudia Lenk, Martin Hofmann, Tzvetan Ivanov, Ahmad Ahmad, Steve Lenk, Ivo W. Rangelow, Alexander Reum, Christoph Reuter, Mathias Holz, Mahmoud Behzadirad, Ashwin K. Rishinaramangalam, Daniel Feezell, and Tito Busani

Journal of Vacuum Science & Technology B **36**, 06JL04 (2018); <https://doi.org/10.1116/1.5048190>

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Highly parallel scanning tunneling microscope based hydrogen depassivation lithography

John N. Randall, James H. G. Owen, Joseph Lake, Rahul Saini, Ehud Fuchs, Mohammad Mahdavi, S. O. Reza Moheimani, and Benjamin Carrion Schaefer

Journal of Vacuum Science & Technology B **36**, 06JL05 (2018); <https://doi.org/10.1116/1.5047939>

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Field-emission scanning probe lithography tool for 150 mm wafer

Mathias Holz, Elshad Guliyev, Ahmad Ahmad, Tzvetan Ivanov, Alexander Reum, Martin Hofmann, Claudia Lenk, Marcus Kaestner, Christoph Reuter, Steve Lenk, Ivo W. Rangelow, and Nikolay Nikolov

Journal of Vacuum Science & Technology B **36**, 06JL06 (2018); <https://doi.org/10.1116/1.5048357>

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