

Curriculum Vitae – Ralph H. Scheicher

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Education

05/2004	Ph.D. in Physics, State University of New York at Albany, USA
05/1999	M.Sc. in Physics, State University of New York at Albany, USA
08/1998	B.Sc. (equivalent) in Physics, Julius-Maximilians-University Würzburg, Germany

Employment

07/2015 – present	Researcher (Forskare) , Department of Physics and Astronomy, Uppsala University
07/2010 – 06/2015	Assistant Professor (Forskarassistent) , Department of Physics and Astronomy, Uppsala University
10/2007 – 06/2010	Guest Researcher (Gästforskare) , Department of Physics and Materials Science, Uppsala University
10/2005 – 09/2007	Visiting Assistant Professor , Dept. of Physics, Michigan Technological University
08/2004 – 09/2005	Postdoctoral Fellow , Department of Physics, Uppsala University
01/2000 – 05/2004	Teaching Assistant , Department of Physics, State University of New York at Albany
10/1999 – 01/2000	Research Assistant , High Energy Accelerator Research Organization (KEK), Tsukuba, and Institute of Physical and Chemical Research (RIKEN), Wako-shi, Japan

Grants and Awards

2020	Swedish Energy Agency, Energimyndigheten (SEK 2,973,436) Project grant (Projektbidrag), <i>Optimization of the flow of hydrogen in amorphous materials: from ultra-fast to ultra-slow</i> ; co-PI, with budget share equivalent to 15% of my salary; main-PI: Dr. Gunnar Karl Pålsson, Uppsala University (4 years)
2018	Swedish Research Council, VR (SEK 3,400,000) Project grant within neutron scattering (Projektbidrag inom neutronspridning), <i>Tuning the speed of hydrogen transport in amorphous metals: from ultra-fast to ultra-slow</i> ; co-PI, with budget share equivalent to 10% of my salary; main-PI: Dr. Gunnar Karl Pålsson, Uppsala University (4 years)
2017	Swedish Research Council, VR (SEK 3,200,000) Project Grant (Projektbidrag), <i>Towards a better understanding of noise in nanopores</i> ; Uppsala University (4 years)

2017	Teacher of the Year Award (<i>F-lärarutmärkelsen</i>) from the Engineering Physics students of Uppsala University
2014	Swedish Research Council, VR (<i>SEK 9,000,000</i>) Framework Grant (Rambidrag), <i>The 3NANO electronic sensor for single-nucleotide detection</i> ; co-PI, with budget share of 18%; main-PI: Prof. Shi-Li Zhang, Uppsala University (4 years)
2014	Gender Equality Fund , Department of Physics & Astronomy, Uppsala University (<i>SEK 62,480</i>) for inviting Dr. Jariyane Prasongkit from Thailand to give a lecture series
2012	Carl Tryggers Foundation (<i>SEK 480,000</i>) scholarship stipend for a postdoc to work on <i>transport calculations in nanopore-based DNA sequencing</i> (2 years; renewed)
2012	Swedish Foundation for International Cooperation in Research and Higher Education, STINT (<i>SEK 276,000</i>) Sweden-Korea Research Cooperation Grant to collaborate with the group of Professor Jun-Hyung Cho at Hanyang University, Seoul on <i>the interaction of biomolecules with surfaces of nano-materials</i> (3 years; renewed)
2011	Benzelius Prize (<i>Diploma and SEK 20,000 prize money</i>) awarded from the Royal Society of Sciences in Uppsala for “ <i>Theoretical contributions to the application of molecular electronics in DNA sequencing with graphene nanopores</i> ”
2010	Swedish Foundation for International Cooperation in Research and Higher Education, STINT (<i>SEK 1,200,000</i>) Institutional Grant for Younger Researchers to <i>build and maintain a collaborative research network on nanopore-based DNA sequencing</i> with Professor Alexandre Reily Rocha of the Universidade Federal do ABC, São Paulo and with Dr. Yuhui He of the Chinese Academy of Sciences, Beijing (3 years)
2009	Swedish Research Council, VR (<i>SEK 4,052,000</i>) Junior Research Position (Forskarassistent) and Project Grant to work on <i>improvements of DNA sequencing using nanopores with functionalized embedded electrodes</i> (4 years)
2009	Futura Foundations (<i>SEK 35,700</i>) multiple travel grants to attend a total of three international conferences outside Sweden
2008	Wenner-Gren Foundations (<i>SEK 480,000</i>) scholarship stipend to explore <i>novel molecular electronics methods for DNA sequencing</i> (2 years; renewed)
2004	Distinguished Doctoral Dissertation Award by the State University of New York at Albany, for “ <i>Best dissertation in any field in the College of Arts and Sciences</i> ”
2002	Teaching Assistant of the Year Award for excellence in graduate and undergraduate teaching by the Department of Physics, State University of New York at Albany
1998	German Academic Exchange Service, DAAD , scholarship to support tuition fees and living costs during graduate studies at the State University of New York at Albany

Selected Invited Talks

12/2023	<i>2nd International Conference on Advances in Nanomaterials and Devices for Energy and Environment (CANDEE-2023)</i> , Gwalior, India
11/2023	Seminar at Fluminense Federal University, Brazil
10/2023	Seminar at Institute of Theoretical Physics, São Paulo State University, Brazil
11/2021	<i>Nanopore Weekly Web-Meeting</i> , organized by Prof. Yi-Tao Long, Prof. Mathias Winterhalter, and Prof. Meni Wanunu
11/2020	<i>Next Generation Sequencing & Clinical Diagnostics</i> , virtual conference, hosted at Oxford, UK
10/2019	Seminar at Huazhong University of Science and Technology (HUST), Wuhan, China
10/2016	<i>6th Annual Next Generation Sequencing & 4th Annual Single Cell Analysis Asia Congress</i> , Singapore
01/2015	<i>7th Asian Conference on High Pressure Research (ACHPR-7)</i> , Bangkok, Thailand
04/2014	Seminar at Ulsan National Institute of Science and Technology (UNIST), South Korea

01/2014	Colloquium at Institute for Computational Physics, University of Stuttgart, Germany
05/2013	Colloquium at Department of Chemistry, POSTECH, Pohang, South Korea
04/2013	<i>Korean Physical Society (KPS) Spring Meeting</i> , Daejeon, South Korea
03/2013	<i>American Physical Society (APS) March Meeting</i> , in the invited session “Physics of Next Generation DNA Sequencing”, Baltimore, USA
06/2012	Centre Européen de Calcul Atomique et Moléculaire (CECAM) workshop about <i>DNA sequencing and detection with nanopores</i> , Scuola Normale Superiore, Pisa, Italy
03/2012	Colloquium at College of Nanoscale Science & Engineering, SUNY Albany, USA
02/2012	<i>Materials Challenges in Alternative and Renewable Energy</i> Conference, Clearwater, FL, USA
10/2011	<i>Jornadas do Centro de Física</i> , University of Minho, Braga, Portugal
07/2011	<i>Club Med Seminar</i> (Student Physical Chemistry Seminar Series), Yale University, USA
04/2011	Keynote lecture at <i>International Conference on Computational & Experimental Engineering and Sciences</i> (ICCES'11), Nanjing, China
04/2009	Colloquium at Department of Physics, National University of Singapore, Singapore
10/2008	Colloquium at Chemistry Department, Chulalongkorn University, Bangkok, Thailand
06/2007	Colloquium at Department of Physics, University of São Paulo, Brazil
06/2006	Nanocarbons Research Committee meeting at the <i>7th International Conference on the Science and Application of Nanotubes</i> (NT'06), Advanced Technology Institute, Nagano, Japan
04/2005	Colloquium at Department of Physics and Astronomy, Michigan State University, USA

Teaching

2023 – present	<i>Everyday Physics</i> , undergraduate course, Uppsala University (UU): instructor
2018 – present	<i>Applied Physics for Molecular Biotechnology</i> , undergraduate course, UU: conducting exercise lessons
2017 – present	<i>Fluid Mechanics for Energy-Related Applications</i> , undergraduate course, UU: instructor and course responsible
2012 – present	<i>Nanobiotechnology</i> , graduate course, UU: giving guest lectures
2011 – present	<i>Thermodynamics for Engineers</i> , undergraduate course, UU: conducting exercise lessons
2019	<i>Hydraulics for Construction Engineering</i> , undergraduate course, UU: instructor and course responsible
2018	<i>Master's Program in Biophysics</i> , co-creator and co-developer, UU
2016 – 2018	<i>Mechanics III</i> , undergraduate course, UU: conducting exercise lessons
2015 – 2017	<i>Electromagnetism and Wave Physics</i> , undergraduate course, UU: conducted exercise lessons and coordinated student projects
2012 – 2017	<i>Quantum Physics</i> , undergraduate course, UU: conducting exercise lessons
2009	<i>Solid State Theory</i> , graduate course, UU: gave guest lectures
2009	<i>Molecular Electronics</i> , graduate course, UU: gave guest lectures
2006	<i>Introductory Solid-State Physics</i> , undergraduate course, Michigan Technological University (MTU): instructor and course responsible
2003 – 2004	<i>The Exploration of Space</i> , undergraduate general education course, State University of New York at Albany (SUNY Albany): teaching assistant (TA)
2003	<i>General Relativity</i> , graduate course, SUNY Albany: TA
2002	<i>Solid State Physics</i> , graduate course, SUNY Albany: TA
2002	<i>Relativistic Quantum Mechanics</i> , graduate course, SUNY Albany: TA
2001 – 2004	<i>General Physics Lab</i> , undergraduate course, SUNY Albany: TA
2000 – 2004	<i>Quantum Mechanics 1 and 2</i> , graduate courses, SUNY Albany: TA

Pedagogical Qualifications

2019	<i>Student-centred teaching and learning</i> , 1 half-day, UU
2017	<i>Supervising Students for Degree Projects (Handledning av studenter)</i> , 2 full-time weeks, UU
2016	<i>Supervising PhD Students (Handledning av doktorander)</i> , 3 full-time weeks, UU
2011	<i>Supervisor Training Course (Forskarhandledarkurs)</i> , 4 half-days, UU
2010	<i>Teacher Training Course</i> , 5 full-time weeks, UU

Supervision

Postdoctoral Fellows	Dr. Sohal Sondarva (02/2024 – present), as co-supervisor Dr. Paulius Malinovskis (09/2020 – 09/2022), as co-supervisor Dr. Rodrigo Garcia Amorim (10/2012 – 09/2014), as main supervisor
Ph.D. students	Lennart Spode (05/2021 – present), as co-supervisor Johan Bylin (09/2019 – present), as co-supervisor Emel Gürbüz (10/2017 – 10/2021), as main supervisor Robert Johansson (06/2011 – 09/2016), as main supervisor
Master's students	Victor Freedman (01/2024 – present) Fabrizio Tabasso (01/2024 – present) Sebastian Cardoch (01/2020 – 09/2020)
Project students	Sebastian Cardoch (06/2017 – 12/2019) Viktor Djurberg (05/2016 – 05/2017) Nicklas Bjärnhall Prytz (03/2015 – 05/2015)
Visitors	Ernane de Freitas Martins, visiting Ph.D. student from São Paulo State University, Brazil (04/2017 – 12/2017) Ganesh Sivaraman, visiting Ph.D. student from University of Stuttgart, Germany (08/2014 – 11/2014, 03/2015) Fabio Arthur Leão de Souza, visiting Ph.D. student from Fluminense Federal University, Brazil (04/2014 – 03/2015)

Professional Activities

Reviewer	For grant proposals: U.S. Department of Energy (DOE), Natural Sciences and Engineering Research Council of Canada (NSERC), Knut and Alice Wallenberg Foundation (KAW) in Sweden, Agency for Science, Technology and Research (A*STAR) in Singapore, Netherlands Organisation for Scientific Research (NWO), Research Grants Council (RGC) in Hong Kong, French National Research Agency (ANR), Lower Austria Research and Education limited liability company (NÖ Forschungs- und Bildungsges.m.b.H., NFB), Kentucky Science and Engineering Foundation (KSEF), and Center for Integrated Nanotechnologies (CINT) of Los Alamos and Sandia National Laboratories. For ongoing projects: <i>monitor for the EIC Pathfinder project “DNA Fairylights” funded by the European Union's H2020 programme, 2022 – 2023.</i> For journals: <i>Science, Nature Nanotechnology, ACS Nano, Nano Letters, Physical Review Letters, Nanoscale, Journal of the American Chemical Society, Chemical Reviews</i> and others.
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Boards	Substitute member of the Department Board at the Department of Physics and Astronomy, Uppsala University, 2023 – present. Elector in the Elections Commission of the Faculty of Science and Technology, Uppsala University, 2017 – 2019. Teaching coordinator for the Division of Materials Theory at the Department of Physics and Astronomy, Uppsala University, 2015 – present. Editorial Board Member for <i>Scientific Reports</i> (Nature Publishing Group), 2015 – present.
Examination	Yuan Zhu (supervisor: Zhen Zhang), Uppsala University, 2024 (Ph.D. reserve committee member). Julien Berger (supervisor: Chan Cao), Swiss Federal Institute of Technology Lausanne (École Polytechnique Fédérale de Lausanne, EPFL), 2023 (Master Thesis, external expert). Stephanie Heerema (supervisor: Cees Dekker), Delft University of Technology, 2018 (Ph.D. committee member).
Organizer	<i>Research Initiative in Biophysics</i> at the Department of Physics and Astronomy, Uppsala University, co-organizer (2018), website: www.physics.uu.se/research/biophysics-initiative <i>Novel Approaches to DNA Sequencing</i> workshop held at Nordita in Stockholm in 2013, co-organizer: Prof. Alexander Balatsky; website: www.nordita.org/dna2013 <i>Hydrides under pressure</i> symposium as part of <i>Study of Matter at Extreme Conditions</i>, SMEC, conferences series, Miami, in 2011 and 2013, co-organized with Dr. Duck Young Kim.
Outreach	Lecture on the topic of “<i>Nanopores: Decoding life with bio-nano-technology</i>” for the general public, as part of the lectures series “<i>13x13</i>” from the Department of Physics & Astronomy, Uppsala University, 2022. Lecture on the topic of “<i>Nanopore research at the intersection of physics and biology</i>” for a high school class from NTI Gymnasium Uppsala, 2022. Interview about “<i>Nanopore-based DNA sequencing</i>” by two students of Värmdö Gymnasium in Stockholm for their school project “<i>Cutting Edge</i>”, 2010.

Publications

108 peer-reviewed articles.

Citation metrics provided by *Web of Science* yield an h-index of 35 (*Google Scholar* yields an h-index of 38).

108. Giuseppe Muscas, Robert Johansson, Sebastian George, Martina Ahlberg, Dimitri Arvanitis, Rajeev Ahuja, **Ralph H. Scheicher**, and Petra E. Jönsson
Unveiling the local structure of the amorphous metal $\text{Fe}_{(1-x)}\text{Zr}_x$ combining first-principles-based simulations and modelling of EXAFS spectra
Scientific Reports **13**, 4983 (2023)
107. Johan Bylin, Paulius Malinovskis, Anton Devishvili, **Ralph H. Scheicher**, and Gunnar K. Pálsson
Hydrogen-induced volume changes, dipole tensor, and elastic hydrogen-hydrogen interaction in a metallic glass
Physical Review B **106**, 104110 (2022)
106. Ernane de Freitas Martins, **Ralph Hendrik Scheicher**, Alexandre Reily Rocha, and Gustavo Troiano Feliciano
A multiscale approach for electronic transport simulation of carbon nanostructures in aqueous solvent
Physical Chemistry Chemical Physics **24**, 24404-24412 (2022)

105. Maciej Kaplan, Johan Bylin, Paulius Malinovskis, **Ralph H. Scheicher**, and Gunnar K. Pálsson
Hydrogen-induced enhancement of thermal stability in VZr(H) metallic glasses
Materialia 24, 101496 (2022)
104. Jariyane Prasongkit, Sirichok Jungthawan, Rodrigo G. Amorim, and **Ralph H. Scheicher**
Single-molecule DNA sequencing using two-dimensional Ti₂C(OH)₂ MXene nanopores: A first-principles investigation
Nano Research 15, 9843–9849 (2022)
103. Sebastian Cardoch, Nicusor Timneanu, Carl Coleman, and **Ralph H. Scheicher**
Distinguishing between Similar Miniproteins with Single-Molecule Nanopore Sensing: A Computational Study
ACS Nanoscience Au 2, 119-127 (2022)
102. Kuan Wang, Qing Hu, Bin Gao, Qi Lin, Fu-Wei Zhuge, Da-You Zhang, Lun Wang, Yu-Hui He, **Ralph H. Scheicher**, Hao Tong, and Xiang-Shui Miao
Threshold switching memristor-based stochastic neurons for probabilistic computing
Materials Horizons 8, 619-629 (2021)
101. Fábio A. L. de Souza, Ganesh Sivaraman, Maria Fyta, **Ralph H. Scheicher**, Wanderlã L. Scopel, and Rodrigo Garcia Amorim
Electrically Sensing Hachimoji DNA nucleotides through a hybrid graphene/h-BN nanopore
Nanoscale 12, 18289-18295 (2020)
100. Ernane de Freitas Martins, Rodrigo G. Amorim, Gustavo Troiano Feliciano, **Ralph Hendrik Scheicher**, and Alexandre Reily Rocha
The role of water on the electronic transport in graphene nanogap devices designed for DNA sequencing
Carbon 158, 314-319 (2019)
99. Fábio A. L. de Souza, Rodrigo G. Amorim, Wanderlã L. Scopel, and **Ralph H. Scheicher**
Controlled current confinement in interfaced 2D nanosensor for electrical identification of DNA
Physical Chemistry Chemical Physics 21, 24884-24890 (2019), inside back cover
98. Pan Zhang, Min Xia, Fuwei Zhuge, Yue Zhou, Zhenyu Wang, Boyi Dong, Yaoyao Fu, Kecheng Yang, Yi Li, Yuhui He, **Ralph H. Scheicher**, and Xiang Shui Miao
Nanochannel-Based Transport in an Interfacial Memristor Can Emulate the Analog Weight Modulation of Synapses
Nano Letters 19, 4279-4286 (2019)
97. Ernane de Freitas Martins, Gustavo Troiano Feliciano, **Ralph Hendrik Scheicher**, and Alexandre Reily Rocha
Simulating DNA Chip Design Using All-Electronic Graphene-Based Substrates
Molecules 24, 951 (2019)
96. Jariyane Prasongkit, Ernane F. Martins, Fábio A. L. de Souza, Wanderlã L. Scopel, Rodrigo G. Amorim, Vittaya Amornkitbamrung, Alexandre R. Rocha, and **Ralph H. Scheicher**
Topological Line Defects Around Graphene Nanopores for DNA Sequencing
Journal of Physical Chemistry C 122, 7094-7099 (2018)
95. Hadi Arjmandi-Tash, Amedeo Bellunato, Chenyu Wen, René C. Olsthoorn, **Ralph H. Scheicher**, Shi-Li Zhang, and Grégory F. Schneider
Zero-depth interfacial nanopore capillaries
Advanced Materials 30, 1703602 (2018), cover picture
94. Hakkim Vovusha, Rodrigo G. Amorim, **Ralph H. Scheicher**, and Biplab Sanyal
Controlling the orientation of nucleobases by dipole moment interaction with graphene/h-BN interfaces
RSC Advances 8, 6527-6531 (2018)
93. Gustavo T. Feliciano, Carlos Sanz-Navarro, Mauricio Domingues Coutinho-Neto, Pablo Ordejón, **Ralph H. Scheicher**, and Alexandre Reily Rocha
Addressing the Environment Electrostatic Effect on Ballistic Electron Transport in Large Systems: A QM/MM-NEGF Approach
Journal of Physical Chemistry B 122, 485-492 (2018)

92. Fábio A. L. de Souza, Rodrigo G. Amorim, Jariyane Prasongkit, Wanderlã L. Scopel, **Ralph H. Scheicher**, and Alexandre R. Rocha
Topological line defects in graphene for applications in gas sensing
Carbon **129**, 803-808 (2018)
91. Malkolm Hinnemo, Jie Zhao, Patrik Ahlberg, Carl Hägglund, Viktor Djurberg, **Ralph H. Scheicher**, Shi-Li Zhang, and Zhi-Bin Zhang
On Monolayer Formation of Pyrenebutyric Acid on Graphene
Langmuir **33**, 3588-3593 (2017)
90. Lennard Mooij, Wen Huang, Sotirios A. Droulias, Robert Johansson, Ola Hartmann, Xiao Xin, Heikki Palonen, **Ralph H. Scheicher**, Max Wolff, and Björgvin Hjörvarsson
Influence of site occupancy on diffusion of hydrogen in vanadium
Physical Review B **95**, 064310 (2017)
89. Ganesh Sivaraman, Rodrigo G. Amorim, **Ralph H. Scheicher**, and Maria Fyta
Insights into the detection of mutations and epigenetic markers using diamondoid-functionalized sensors
RSC Advances **7**, 43064-43072 (2017)
88. Fábio A. L. de Souza, Rodrigo G. Amorim, Wanderlã L. Scopel, and **Ralph H. Scheicher**
Electrical detection of nucleotides via nanopores in a hybrid graphene/h-BN sheet
Nanoscale **9**, 2207-2212 (2017)
87. Ganesh Sivaraman, Fábio A. L. de Souza, Rodrigo G. Amorim, Wanderlã L. Scopel, Maria Fyta, and **Ralph H. Scheicher**
Electronic Transport along Hybrid MoS₂ Monolayers
Journal of Physical Chemistry C **120**, 23389-23396 (2016)
86. Ganesh Sivaraman, Rodrigo G. Amorim, **Ralph H. Scheicher**, and Maria Fyta
Benchmark investigation of diamondoid-functionalized electrodes for nanopore DNA sequencing
Nanotechnology **27**, 414002 (2016)
85. Fábio A. L. de Souza, Rodrigo G. Amorim, Wanderlã L. Scopel, and **Ralph H. Scheicher**
Nano-structured interface of graphene and h-BN for sensing applications
Nanotechnology **27**, 365503 (2016)
84. Rodrigo G. Amorim, Alexandre Reily Rocha, and **Ralph H. Scheicher**
Boosting DNA Recognition Sensitivity of Graphene Nanogaps through Nitrogen Edge Functionalization
Journal of Physical Chemistry C **120**, 19384-19388 (2016)
83. Reji Nedumkandathil, Verina F. Kranak, Robert Johansson, Jonas Ångström, Oliver Balmes, Mikael S. Andersson, Per Nordblad, **Ralph H. Scheicher**, Martin Sahlberg, and Ulrich Häussermann
Hydrogenation induced structure and property changes in GdGa
Journal of Solid State Chemistry **239**, 184-191 (2016)
82. Yuhui He, Makusu Tsutsui, **Ralph H. Scheicher**, Xiang Shui Miao, and Masateru Taniguchi
Salt-Gradient Approach for Regulating Capture-to-Translocation Dynamics of DNA with Nanochannel Sensors
ACS Sensors **1**, 807-816 (2016)
81. Chenyu Wen, Shuangshuang Zeng, Zhen Zhang, Klas Hjort, **Ralph Scheicher**, and Shi-Li Zhang
On nanopore DNA sequencing by signal and noise analysis of ionic current
Nanotechnology **27**, 215502 (2016)
80. Jonas Ångström, Robert Johansson, Tapati Sarkar, Magnus H. Sørby, Claudia Zlotea, Mikael S. Andersson, Per Nordblad, **Ralph H. Scheicher**, Ulrich Häussermann, and Martin Sahlberg
Hydrogenation-Induced Structure and Property Changes in the Rare-Earth Metal Gallide NdGa: Evolution of a [GaH]²⁻ Polyanion Containing Peierls-like Ga-H Chains
Inorganic Chemistry **55**, 345-352 (2016)
79. Ganesh Sivaraman, Rodrigo G. Amorim, **Ralph H. Scheicher**, and Maria Fyta
Diamondoid-functionalized gold nanogaps as sensors for natural, mutated, and epigenetically modified DNA nucleotides
Nanoscale **8**, 10105-10112 (2016)

78. Soumyajyoti Haldar, Rodrigo G. Amorim, Biplab Sanyal, **Ralph H. Scheicher**, and Alexandre R. Rocha
Energetic stability, STM fingerprints and electronic transport properties of defects in graphene and silicene
RSC Advances **6**, 6702-6708 (2016)
77. Jariyane Prasongkit, Gustavo T. Feliciano, Alexandre R. Rocha, Yuhui He, Tanakorn Osotchan, Rajeev Ahuja, and **Ralph H. Scheicher**
Theoretical assessment of feasibility to sequence DNA through interlayer electronic tunneling transport at aligned nanopores in bilayer graphene
Scientific Reports **5**, 17560 (2015)
76. Sun-Woo Kim, Hyun-Jung Kim, Jin-Ho Choi, **Ralph H. Scheicher**, and Jun-Hyung Cho
Contrasting interedge superexchange interactions of graphene nanoribbons embedded in h-BN and graphane
Physical Review B **92**, 035443 (2015)
75. Jariyane Prasongkit, Rodrigo G. Amorim, Sudip Chakraborty, Rajeev Ahuja, **Ralph H. Scheicher**, and Vittaya Amornkitbamrung
Highly Sensitive and Selective Gas Detection Based on Silicene
Journal of Physical Chemistry C **119**, 16934-16940 (2015)
74. Robert Johansson, Rajeev Ahuja, Olle Eriksson, Björgvin Hjörvarsson, and **Ralph H. Scheicher**
Effect of uniaxial strain on the site occupancy of hydrogen in vanadium from density-functional calculations
Scientific Reports **5**, 10301 (2015)
73. Rodrigo G. Amorim and **Ralph H. Scheicher**
Silicene as a new potential DNA sequencing device
Nanotechnology **26**, 154002 (2015)
72. Gustavo T. Feliciano, Carlos Sanz-Navarro, Mauricio Domingues Coutinho-Neto, Pablo Ordejón, **Ralph H. Scheicher**, and Alexandre Reily Rocha
Capacitive DNA Detection Driven by Electronic Charge Fluctuations in a Graphene Nanopore
Physical Review Applied **3**, 034003 (2015)
71. Rafael B. Araujo, **Ralph H. Scheicher**, J. S. de Almeida, A. Ferreira da Silva, and Rajeev Ahuja
Lithium transport investigation in $\text{Li}_x\text{FeSiO}_4$: A promising cathode material
Solid State Communications **173**, 9-13 (2013)
70. Rafael B. Araujo, **Ralph H. Scheicher**, J. S. de Almeida, A. Ferreira da Silva, and Rajeev Ahuja
First-principles investigation of Li ion diffusion in $\text{Li}_2\text{FeSiO}_4$
Solid State Ionics **247-248**, 8-14 (2013)
69. Yuhui He, Makusu Tsutsui, **Ralph H. Scheicher**, Chun Fan, Masateru Taniguchi, and Tomoji Kawai
Mechanism of How Salt-Gradient-Induced Charges Affect the Translocation of DNA Molecules through a Nanopore
Biophysical Journal **105**, 776-782 (2013)
68. Jonas Ångström, Robert Johansson, Line Holdt Rude, Carsten Gundlach, **Ralph H. Scheicher**, Rajeev Ahuja, Olle Eriksson, Torben R. Jensen, and Martin Sahlberg
Hydrogen storage properties of the pseudo binary laves phase $(\text{Sc}_{1-x}\text{Zr}_x)(\text{Co}_{1-y}\text{Ni}_y)_2$ system
International Journal of Hydrogen Energy **38**, 9772-9778 (2013)
67. Jariyane Prasongkit, Anton Grigoriev, Biswarup Pathak, Rajeev Ahuja, and **Ralph H. Scheicher**
Theoretical Study of Electronic Transport through DNA Nucleotides in a Double-Functionalized Graphene Nanogap
Journal of Physical Chemistry C **117**, 15421-15428 (2013)
66. Jun-Ho Lee, Yun-Ki Choi, Hyun-Jung Kim, **Ralph H. Scheicher**, and Jun-Hyung Cho
Physisorption of DNA Nucleobases on h-BN and Graphene: vdW-Corrected DFT Calculations
Journal of Physical Chemistry C **117**, 13435-13441 (2013)
65. Nannan Li, Geunsik Lee, Jae Won Yang, Heeyoung Kim, Min Sun Yeom, **Ralph H. Scheicher**, Jai Sam Kim, and Kwang S. Kim
Noncovalent Functionalization with Alkali Metal to Separate Semiconducting from Metallic Carbon Nanotubes: A Theoretical Study
Journal of Physical Chemistry C **117**, 4309-4313 (2013)

64. Yuhui He, Makusu Tsutsui, **Ralph H. Scheicher**, Fan Bai, Masateru Taniguchi, and Tomoji Kawai
Thermophoretic Manipulation of DNA Translocation through Nanopores
ACS Nano **7**, 538-546 (2013)
63. Ranjit Pati, R. H. Pink, **R. H. Scheicher**, Narayan Sahoo, S. N. Ray, and T. P. Das
Nuclear Quadrupole Interactions in Nuclear Quadrupole Resonance Detection of Energetic and Controlled Materials: Theoretical Study
Applied Magnetic Resonance **43**, 591-617 (2012)
62. Shuanglin Hu, S.-Y. Li, R. Ahuja, C. G. Granqvist, K. Hermansson, G. A. Niklasson, and **R. H. Scheicher**
Optical properties of Mg-doped VO₂: Absorption measurements and hybrid functional calculations
Applied Physics Letters **101**, 201902 (2012)
61. **Ralph H. Scheicher**, Anton Grigoriev, and Rajeev Ahuja
DNA sequencing with nanopores from an ab initio perspective
Journal of Materials Science **47**, 7439-7446 (2012)
60. Zhao Qian, M. Sterlin Leo Hudson, Himanshu Raghubanshi, **Ralph H. Scheicher**, Biswarup Pathak, C. Moysés Araújo, Andreas Blomqvist, Börje Johansson, O. N. Srivastava, and Rajeev Ahuja
Excellent Catalytic Effects of Graphene Nanofibers on Hydrogen Release of NaAlH₄
Journal of Physical Chemistry C **116**, 10861-10866 (2012)
59. Biswarup Pathak, Henrik Löfås, Jariyane Prasongkit, Anton Grigoriev, Rajeev Ahuja, and **Ralph H. Scheicher**
Double-functionalized nanopore-embedded gold electrodes for rapid DNA sequencing
Applied Physics Letters **100**, 023701 (2012), cover image, featured in APL 50th Anniversary Editor's Picks
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