
Nevill Gonzalez Szwacki

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BORN: September 9, 1973

CITIZENSHIP: Polish and Venezuelan

LANGUAGES SPOKEN: English, Polish (native), Spanish (native)

ACADEMICS

- *2010-present* – **Assistant Professor**, Institute of Theoretical Physics, University of Warsaw
- *2004-2009* – **Robert A. Welch Postdoctoral Fellow**
 - Dept. of Physics, Texas Southern University, Houston, Texas (2008-2009)
 - Dept. of Physics, Texas Tech University, Lubbock, Texas (2006-2008)
 - Dept. of Mechanical Engineering & Material Science, Rice University, Houston, Texas (2004-2006)
- *2003-2006* – **Assistant Professor**, Institute of Physics, Polish Academy of Sciences, Warsaw
- *1998-2003* – **Ph.D.**, Institute of Physics, Polish Academy of Sciences, Warsaw. Graduation Date: June 2003. Dissertation title: Structural, electronic and optical properties of $\text{GaAs}_{1-x}\text{N}_x$ and $\text{Ga}_{1-x}\text{B}_x\text{As}$ alloys: calculations from first principles
- *1992-1998* – **M.S.**, Institute of Theoretical Physics, Faculty of Physics, Warsaw University. Graduation Date: November 1998. Dissertation title: Three-dimensional tight-binding model accounting for the coupling between magnetic layers in EuTe/PbTe superlattices

RESEARCH INTEREST

- first principles methods, quantum-mechanical modeling and simulations
- nanomaterials: boron fullerenes and nanotubes, metal silicide nanowires
- impurities and native defects in semiconductors, diluted magnetic semiconductors

HONORS

- the work about boron fullerenes was selected by the editors of Physical Review Letter as an “Editors’ Suggestion” (Phys. Rev. Lett. 98, 166804 (2007)). It also attracted the attention of several online news media (Science Daily, Nanotechnology Now, PhysOrg.com)
- invited talks and seminars:
 - *Theory of interfacial interdiffusion and electromigration of H, dopants, and vacancies in GaN/AlN*, Gordon Research Conference on Point Defects, Line Defects, and Interfaces in Semiconductors, New London, NH, USA, August 5, 2008

- *Determination of electronic, crystallographic, and magnetic properties of Ga(As,N) and (Mn,Zn)Te compounds by ab initio calculations*, University of Modena and Reggio Emilia, Modena, Italy, November 21, 2004
- *Ab initio study of the electronic, magnetic, and crystallographic properties of Ga(As,N), (Ga,B)As, and (Mn,Zn)Te compounds*, University of Los Andes, Merida, Venezuela, July 27, 2004

PROFESSIONAL MEMBERSHIPS

- American Physical Society

PUBLICATIONS

Books:

1. N. Gonzalez Szwacki and T. Szwacka, "*Basic Elements of Crystallography*" (Pan Stanford Publishing, 2009).
2. Y. Lin, N. Gonzalez Szwacki, and B. I. Yakobson, "*Quasi-one-dimensional silicon nanostructures*", in *Nanosilicon*, edited by V. Kumar (Elsevier, Amsterdam, 2007).

Papers in Refereed Journals:

1. N. Gonzalez Szwacki, V. Weber, and C. J. Tymczak, "*Aromatic Borozene*", **Nanoscale Res. Lett.** **4**, 1085 (2009).
2. N. Gonzalez Szwacki, M. Sanati, and S. K. Estreicher, "*Two FeH pairs in n-type Si and their implications: A theoretical study*", **Phys. Rev. B** **78**, 113202 (2008).
3. S. K. Estreicher, M. Sanati, and N. Gonzalez Szwacki, "*Iron in silicon: Interactions with radiation defects, carbon, and oxygen*", **Phys. Rev. B** **77**, 125214 (2008).
4. N. Gonzalez Szwacki, "*Boron Fullerenes: A First-Principles Study*", **Nanoscale Res. Lett.** **3**, 49 (2008).
5. S. K. Estreicher, M. Sanati, and N. Gonzalez Szwacki, "*Fundamental Interactions of Fe in silicon: First-Principles Theory*", **Solid State Phenomena** **131-133**, 233 (2008).
6. M. Sanati, N. Gonzalez Szwacki, and S. K. Estreicher, "*Interstitial Fe in Si: Interactions with hydrogen and shallow dopants*", **Phys. Rev. B** **76**, 125204, (2007).
7. N. Gonzalez Szwacki, A. Sadrzadeh, and B. I. Yakobson, "*B₈₀ Fullerene: An Ab Initio Prediction of Geometry, Stability, and Electronic Structure*", **Phys. Rev. Lett.** **98**, 166804 (2007).
8. N. Gonzalez Szwacki and B. I. Yakobson, "*Energy decomposition analysis of metal silicide nanowires from first principles*", **Phys. Rev. B** **75**, 035406 (2007).
9. P. Bogusławski, N. Gonzalez Szwacki, and J. Bernholc, "*Interfacial segregation and electrodiffusion of dopants in AlN/GaN superlattices*", **Phys. Rev. Lett.** **96**, 185501 (2006).
10. N. E. Christensen, I. Gorczyca, A. Svane, N. Gonzalez Szwacki, and P. Bogusławski, "*Theoretical Studies of Semiconductors, with and without Defects, under Pressure*", **Phys. Stat. Sol. (b)** **235**, 374 (2003).
11. N. Gonzalez Szwacki and P. Bogusławski, "*GaAs:N vs GaAs:B: Symmetry-induced effects*", **Phys. Rev. B** **64**, R161201 (2001).

Conference Papers:

1. N. Gonzalez Szwacki and S. K. Estreicher, "First-principles investigations of Fe-H interactions in silicon", proceedings of the 24th International Conference on Defects in Semiconductors, **Physica B** **401-402**, 171 (2007).
2. P. Djemia, Y. Roussigné, A. Stashkevich, W. Szuszkiewicz, N. Gonzalez Szwacki, E. Dynowska, E. Janik, B. J. Kowalski, G. Karczewski, P. Bogusławski, M. Jouanne, and J. F. Morhange, "Elastic properties of zinc blende MnTe", proceedings of the XXXIII International School on Physics of Semiconducting Compounds, **Acta Phys. Polon. A** **106**, 239 (2004).
3. N. Gonzalez Szwacki, E. Przeździecka, E. Dynowska, P. Bogusławski, and J. Kossut, "Structural properties of MnTe, ZnTe, and ZnMnTe", proceedings of the XXXIII International School on Physics of Semiconducting Compounds, **Acta Phys. Polon. A** **106**, 233 (2004).
4. N. Gonzalez Szwacki, P. Bogusławski, I. Gorczyca, N. E. Christensen, and A. Svane, "Electronic structure and optical properties of GaAs_{1-x}N_x and Ga_{1-x}B_xAs alloys", proceedings of the 26th International Conference on the Physics of Semiconductors, (ICPS26), Edinburgh, UK, July 28 - August 2 (2002), 253 (2003).
5. N. Gonzalez Szwacki, P. Bogusławski, I. Gorczyca, N. E. Christensen, and A. Svane, "Electronic structure and optical properties of GaAs_{1-x}N_x and Ga_{1-x}B_xAs alloys", proceedings of the XXXI International School on the Physics of Semiconducting Compounds, **Acta Phys. Polon. A** **102**, 633 (2002).

PRESENTATIONS AT CONFERENCES AND SEMINARS

1. N. Gonzalez Szwacki, V. Weber, and C. J. Tymczak, "Borozene: the boron hydride analog of benzene", 2009 NSTI Nanotechnology Conference and Expo, Houston, USA, May 3-7, 2009. (poster)
2. P. Bogusławski, J. Bernholc, P. Jakubas, and N. Gonzalez Szwacki, "Theory of interfacial interdiffusion and electromigration of H, dopants, and vacancies in GaN/AlN", Gordon Research Conference on Point Defects, Line Defects, and Inter-faces in Semiconductors, New London, NH, USA, August 3-8, 2008. (invited talk)
3. N. Gonzalez Szwacki, "Boron Fullerenes and Nanotubes: An Ab Initio Study", 2007 Virtual Conference on Nanoscale Science and Technology, VC-NST-2007, Fayetteville, USA, October 21-25, 2007.
4. N. Gonzalez Szwacki and S. K. Estreicher, "First-principles investigations of Fe-H interactions in silicon", 24th International Conference on Defects in Semiconductors, Albuquerque, USA, July 22-27, 2007. (poster)
5. N. Gonzalez Szwacki and Boris I. Yakobson, "Energy Decomposition Analysis of Metal Silicide Nanowires", Spring Meeting of the Materials Research Society, San Francisco, USA, April 17-21, 2006. (poster)
6. N. Gonzalez Szwacki, "Determination of electronic, crystallographic, and magnetic properties of Ga(As,N) and (Mn,Zn)Te compounds by ab initio calculations", invited seminar presented at the University of Modena and Reggio Emilia, Modena, Italy, November 21, 2004.
7. N. Gonzalez Szwacki, "Structural properties of MnTe, ZnTe, and ZnO, and phase stability of Mn_xZn_{1-x}Te alloy", European Materials Research Society Fall Meeting, (E-MRS), Warsaw, Poland, September 6-10, 2004.

8. N. Gonzalez Szwacki, "Ab initio study of the electronic, magnetic, and crystallographic properties of Ga(As,N), (Ga,B)As, and (Mn,Zn)Te compounds", invited seminar presented at the University of Los Andes, Merida, Venezuela, July 27, 2004.
9. N. Gonzalez Szwacki, E. Przeździecka, E. Dynowska, P. Bogusławski, "Elastic properties and structural stability of MnTe, ZnTe, ZnO, and ZnMnTe", 33rd International School on the Physics of Semiconducting Compounds, Jaszowiec, Poland, May 28 - June 4, 2004. (poster)
10. N. Gonzalez Szwacki, P. Bogusławski, "Segregation of dopants and defects in AlAs/GaAs heterostructures", 32nd International School on the Physics of Semiconducting Compounds, Jaszowiec, Poland, May 30 - June 6, 2003. (poster)
11. N. Gonzalez Szwacki, "Electronic structure and optical properties of GaAs_{1-x}N_x and Ga_{1-x}B_xAs alloys", 31st International School on the Physics of Semiconducting Compounds, Jaszowiec, Poland, June 7-14, 2002.
12. N. Gonzalez Szwacki, "Electronic Structure of GaAs_{1-x}N_x and Ga_{1-x}B_xAs Alloys", 29th International School on the Physics of Semiconducting Compounds, Jaszowiec, Poland, June 2-9, 2000.

TEACHING EXPERIENCE

- **substitute instructor:**
 - *Physical Properties of Solids*, Rice University, Spring 2005 and Spring 2006
- **teaching assistant:**
 - *Numerical Methods*, College of Sciences - Polish Academy of Sciences, Fall 1999 and Spring 2000
 - *Electronic Structure of Solids*, College of Sciences - Polish Academy of Sciences, Spring 2001
 - *Solid State Theory*, Cardinal Stefan Wyszyński University, Fall 2001 and Spring 2002

REFERENCES CONTACT INFORMATION

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