Nevill Gonzalez Szwacki

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BORN: September 9, 1973 **CITIZENSHIP:** Polish

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 $GaAs_{1-x}N_x$ and $Ga_{1-x}B_xAs$ 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

RESEARCH HIGLIGHTS

- Phys. Rev. Lett. 98, 166804 (2007) was selected by the editors as the "Editors' Suggestion;" was selected to appear in the Virtual Journal of Nanoscale Science & Technology; attracted the attention of several online news media (Science Daily, Nanotechnology Now, PhysOrg.com)
- Phys. Rev. B 75, 035406 (2007) was selected to appear in the Virtual Journal of Nanoscale Science & Technology

PROFESSIONAL MEMBERSHIPS

- American Physical Society

PUBLICATIONS

Books:

2. N. Gonzalez Szwacki and T. Szwacka, "*Basic Elements of Crystallography*" (Pan Stanford Publishing, 2010).
1. Y. Lin, N. Gonzalez Szwacki, and B. I. Yakobson, "*Quasi-one-dimensional silicon nanostructures*", in Nanosilicon, edited by V. Kumar (Elsevier, Amsterdam, 2007).

Refereed Journal and Conference Papers:

18. N. Gonzalez Szwacki and C. J. Tymczak, "*The symmetry of the boron buckyball and a related boron nanotube*", **Chem. Phys. Lett. 494**, 80 (2010).
17. N. Gonzalez Szwacki, V. Weber, and C. J. Tymczak, "*Aromatic Borozene*", **Nanoscale Res. Lett. 4**, 1085 (2009).
16. 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).
15. 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).
14. N. Gonzalez Szwacki, A. Sadrzadeh, and B. I. Yakobson, "*Erratum: B_{80} Fullerene: An Ab Initio Prediction of Geometry, Stability, and Electronic Structure [Phys. Rev. Lett. 98, 166804 (2007)]*", **Phys. Rev. Lett. 100**, 159901(E) (2008).
13. N. Gonzalez Szwacki, "*Boron Fullerenes: A First-Principles Study*", **Nanoscale Res. Lett. 3**, 49 (2008).
12. 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).
11. N. Gonzalez Szwacki and S. K. Estreicher, "*First-principles investigations of Fe-H interactions in silicon*", **Physica B 401-402**, 171 (2007).
10. 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).
9. N. Gonzalez Szwacki, A. Sadrzadeh, and B. I. Yakobson, "*B_{80} 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).
7. P. Bogusławski, N. Gonzalez Szwacki, and J. Bernholc, "*Interfacial segregation and electrodiffusion of dopants in AlN/GaN superlattices*", **Phys. Rev. Lett. 96**, 185501 (2006).
6. 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*", **Acta Phys. Polon. A 106**, 239 (2004).
5. N. Gonzalez Szwacki, E. Przeździecka, E. Dynowska, P. Bogusławski, and J. Kossut, "*Structural properties of MnTe, ZnTe, and ZnMnTe*", **Acta Phys. Polon. A 106**, 233 (2004).
4. 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).
3. 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).

2. 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*", **Acta Phys. Polon. A 102**, 633 (2002).
1. N. Gonzalez Szwacki and P. Bogusławski, "*GaAs:N vs GaAs:B: Symmetry-induced effects*", **Phys. Rev. B 64**, R161201 (2001).

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. 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.
3. 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)
4. 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)
5. 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.
6. 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.
7. 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.
8. N. Gonzalez Szwacki, E. Przeździecka, E. Dynowska, P. Bogusławski, "*Elastic properties and structural stability of MnTe, ZnTe, ZnO, and ZnMnTe*", 33nd International School on the Physics of Semiconducting Compounds, Jaszowiec, Poland, May 28 - June 4, 2004. (poster)
9. 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)
10. 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.
11. N. Gonzalez Szwacki, "*Electronic Structure of* $GaAs_{1-x}N_x$ *and* $Ga1_{-x}B_xAs$ *Alloys*", 29th International School on the Physics of Semiconducitng 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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