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Education

Ph.D. Physics, Harvard University, November 1996, GPA 3.89

A.M. Physics, Harvard University, June 1992

B.S. Physics and B.S. Mathematics, Virginia Polytechnic Institute and State University, June 1990, GPA 3.99

Appointments

Thrust Leader for CINT TSNP thrust, Sandia National Lab, January 2009-present

Principal Member of the Technical Staff, Sandia National Laboratories, October 2003 - Present

Senior Member of the Technical Staff, Sandia National Laboratories, July 2000 -October 2003

Postdoctoral Researcher, Sandia National Laboratories, May 1998 - July 2000

Postdoctoral Researcher, Harvard University, November 1996 - April 1998

Postdoctoral Researcher, Rutgers University, October 1996 - November 1996

Research Staff, Harvard University, July 1996 - October 1996

Research Assistant, Harvard University, Fall 1993 - June 1996

Teaching Fellow, Harvard University, Fall 1994

Undergraduate Research Fellow, Oak Ridge National Laboratory, Summer 1989

Publications

1. *Determining the GaSb/GaAs-(2x8) Reconstruction*, J.E. Bickel, N.A. Modine, and J. Mirecki Millunchick, Surface Science 603, 2945 (2009).
2. *Surface Atomic Order of Compound III-V Semiconductor Alloys at Finite Temperature*, J.C. Thomas, J. Mirecki Millunchick, N.A. Modine, and A. Van der Ven, Phys. Rev. B 80, 125315 (2009).
3. *Elastically induced coexistence of surface reconstructions*, J.E. Bickel, N.A. Modine, C. Pearson, J. Mirecki Millunchick, Phys. Rev. B 77 (2008).
4. *Atomic size mismatch strain induced surface reconstructions*, J.E. Bickel, N.A. Modine, A. Van der Ven, J. Mirecki Millunchick, Appl. Phys. Lett. 92 (2008).
5. *Structure of III-Sb(001) Growth Surfaces: The Role of Heterodimers*, W. Barvosa Carter, A. S. Bracker, J. C. Culbertson, B. Z. Nosho, B. V. Shanabrook, L. J. Whitman, Hanchul Kim, N. A. Modine, and E. Kaxiras, Phys. Rev. Lett. 84, 4649 (2000).
6. *Theory of Sb-induced triple-period ordering in GaInP*, R. R. Wixom, G. B. Stringfellow, and N. A. Modine, Phys. Rev. B 64, 201322 (2001).
7. *Perturbation-induced Compositional Instability in Epitaxial Binary-Alloy Films*, S. R. Lee and N. A. Modine, Phys. Rev. Lett. 89, 205701 (2002).
8. *Theory of Surfactant (Sb) Induced Reconstructions on InP(001)*, R. R. Wixom, N. A. Modine, and G. B. Stringfellow, Phys. Rev. B 67, 115309 (2003).

9. *The Optimized Effective Potential With Finite Temperature*, R. A. Lippert, N. A. Modine, and A. F. Wright, J. Phys.: Condens. Matter 18, 4295 (2006).
10. *Comparison of Two Methods for Circumventing the Coulomb Divergence in Supercell Calculations for Charged Point Defects*, A.F. Wright and N.A. Modine, Phys. Rev. B 74, 235209 (2006).

Collaborators (last 48 months): Harvard University: E. Kaxiras, M. Stopa; Massachusetts Institute of Technology: R.A. Lippert; Sandia National Laboratories: M.E. Chandross, M.P. Desjarlais, R.M. Van Ginhoven, H.P. Hjalmarson, A.E. Mattsson, R.P. Muller, P.A. Schultz, M.P. Sears, R.R. Wixom, A. F. Wright, R.E. Jones, D.L. Olmsted, J.A. Templeton, G.J. Wagner, J.P. Sullivan, D.A. Czaplewski, T.A. Friedmann, J.R. Wendt, N. Sepulveda, D. M. Aslam; Los Alamos National Laboratory: S.K. Kilina, S. Tretiak, D.A. Yarotski, J.X. Zhu, A. Taylor, A.V. Balatsky; University of Michigan, Ann Arbor: J.E. Bickel, J.C. Thomas, J. Mirecki-Millunchick, A. Roposan, Lee Sears III, A. Van der Ven; University of Michigan, Flint: C.A. Pearson; University of Kentucky: M.J. Beck; Lockheed Martin: R. M. Hatcher

Graduate Advisor: E. Kaxiras, Harvard University

Thesis Advisor and Postgraduate-Scholar Sponsor: Ph.D Committee Member, Ryan R. Wixom, University of Utah; Ph.D Committee Member, Jessica E. Bickel, University of Michigan; Postdoctoral Scholars Sponsored: None

Synergistic Activities

Publicly Available Software:

ACRES: Adaptive Coordinate Real-space Electronic Structure, N. A. Modine, G. Zumbach, U. V. Waghmare, G. S. Smith, Melvin Chen, Hanchul Kim, and E. Kaxiras, Distributed by the Department of Defense Common High-Performance Software Support Initiative.

HARES: High-performance-fortran Adaptive-grid Real-space Electronic Structure, U. V. Waghmare, Hanchul Kim, I. J. Park, N. A. Modine, P. Maragakis, G. Zumbach, and E. Kaxiras, Distributed by the National Nanotechnology Infrastructure Network.

Socorro Electronic-Structure Software, A. F. Wright, N. A. Modine, R. A. Lippert, Ryan Hatcher, Alan Tackett, A. E. Mattsson, S. M. Foiles, M. P. Sears, R. P. Muller, and S. J. Plimpton, Copyright (2002) Sandia Corporation.