Jack C. Wells
Group Leader
Nanomaterials Theory Institute
Center for Nanophase Materials Sciences
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Education

Centre College	Physics	B.A., *Magna Cum Laude*, 1985
Vanderbilt University	Physics	M.S., 1989
Vanderbilt University	Physics	Ph.D., 1994

Research Interests

Theoretical description and numerical simulation of nanoscale systems and materials; Synthesis of carbon nanomaterials; Electronic structure of conducting polymers, biological molecules, and atomic clusters; Multi-photon processes in light-matter interactions; Collision physics, Electron-positron pair production in relativistic heavy-ion collisions, Modeling, and simulation on parallel supercomputers; Performance analysis; Algorithms for global optimization; Revolutionary technologies for high-performance computing.

Professional Experience

2008–present	Group Leader, Nanomaterials Theory Institute (NTI), Center for Nanophase Materials Sciences (CNMS), Oak Ridge National Laboratory (ORNL)
2008–present	Group Leader, Computational Materials Sciences Group, Computer Science and Mathematics Division, ORNL
2006–2008	Legislative Fellow, U.S. Senate, Office of U.S. Senator Lamar Alexander (R-TN)
2005–2008	Senior Research Staff Member, Nanomaterials Theory Institute, CNMS, ORNL
2004–2006	Computing and Computational Sciences Fellow, ORNL
2003–2008	Senior Research Staff Member, Computational Materials Sciences Group, CSMD, ORNL
2001–2003	Research Staff Member, Computational Materials Sciences Group, CSMD, ORNL
2000–2001	Group Leader, Computational Nanotechnology Group, Center for Engineering Science Advanced Research (CESAR), CSMD, ORNL
1999–2000	Research Staff Member, Computational Nanotechnology Group, CESAR, CSMD, ORNL
1997–1999	Wigner Fellow, Center for Computational Sciences Division, ORNL
1994–1997	Institute Fellow, Institute for Theoretical Atomic and Molecular Physics (ITAMP), Harvard University
1994	Visiting Assistant Professor of Physics, Pikeville College

Professional and Synergistic Activities

2009	Member, External Advisory Board, NanoScience Center, University of South Carolina
2009	Member, Advisory Board, International Conference on Nano-Giga Challenge in Microelectronics
2005	Editor and Working Group Member, SciDAC-2 Strategic Plan, DOE, Office of Advanced Scientific Computing Research
2004–2005	Program Committee, Fall Creek Falls Conference on Computational Science
1989–present	Member: American Physical Society
2009–present	Member: Materials Research Society
2009–present	Member: American Association for the Advancement of Science

Honors and Awards

1999	ORNL Development Accomplishment Award
1998	DOE Travel Award
1997–1999	Wigner Fellowship
1989	Dissertation Enhancement Award, Vanderbilt University
1985	Phi Beta Kappa

Selected Peer-Reviewed Publications (over 40 in total)

"Simple Model of the Interrelation Between Single- and Multi-Wall Carbon Nanotube Growth Rates for the CVD Process", R. F. Wood, S. Pannala, J. C. Wells, A. A. Puretzky, and D. B. Geohegan, *Phys. Rev. B* **75**, 235446 (2007).

"First-Principles Transversal DNA Conductance Deconstructed," X. G. Zhang, P. S. Krstic, R. Ziki, J. C. Wells, and M. Fuentes-Cabrera, *Biophysical Journal* **91**, L04 (2006).

"Size-Expanded DNA Bases: An *Ab-Initio* Study of Their Structural and Electronic Properties," Fuentes-Cabrera M, Sumpter, BG, Wells, JC, *J. Phys. Chem. B* **109**, 21135 (2005).

"Far-Field Modulation of Fluorescence Decay Rates in Pairs of Oriented Semiconducting Polymer Nanostructures," M. D. Barnes, P. S. Krstic, P. Kumar, A. Mehta, and J. C. Wells, *Phys. Rev. B* **71**, 241303 (2005).

"Multiscale Simulations of Carbon Nanotube Nucleation and Growth," J. C. Wells, D. W. Noid, B. G. Sumpter, and R.F. Wood, *J. Nanosci. Nanotech.* **4**, 414 (2004).

"Adsorption of a Carbon Atom on the Ni-38 Magic Cluster and Three Low-Index Nickel Surfaces," Q.-M. Zhang, J. C. Wells, X. G. Gong, Z. Y. Zhang, *Phys. Rev. B* **69**, 205413 (2004).

"Computatonal Chemistry for Molecular Electronics," P. S. Krstic, D. J. Dean, X.-G. Zhang, D. Keffer, Y. S. Leng, P. T. Cummings, and J. C. Wells, *J. Comp. Mat. Sci*. **28**, 321 (2003).

"Lattice, Time-Dependent Schroedinger Equation Solution for Ion-Atom Collisions," D. R. Schultz, M. R. Strayer, and J. C. Wells, *Phys. Rev. Lett.* **82**, 3976 (1999).

Collaborations Outside ORNL During Past Five Years:

P. T. Cummings, Vanderbilt University, D. Keffer, University of Tennessee, Knoxville, I. A. Merkulov, Ioffe Institute RAS, Q.-M. Zhang, University of Texas at Arlington, Q. Niu, University of Texas at Austin, M. D. Barnes, University of Massachusetts-Amherst, X.-G. Gong, Fudan University., Shanghai, A.V. Meleshko, N. C. State University

Graduate and Postdoc Advisors:

Graduate Advisor: Prof. Volker E. Oberacker (Vanderbilt University)
Graduate Advisor: Dr. Michael Strayer (ORNL)
Post-graduate Advisor: Prof. Eric Heller (Harvard University)

Thesis Advisor and Postgraduate-Scholar Sponsor:

Postdoctoral Scholars:

Dr. Miguel Fuentes-Cabrera (2004–2006)
Dr. Stephen Shevlin (2001–2003)
Dr. Jianxin Zhang (2003-2005)