Dr. Barry L. Burks

Home Address
9224 Kestral Ridge Drive
Charlotte, NC 28269-6169
Cell: (704) 426-9006
Email: barryburks@aol.com

Work Address
University of North Carolina
at Charlotte
9201 University City Blvd.
Charlotte, NC 28223-0001
Phone: (704) 687-8283
Fax: (704) 687-8285
Email: bburks1@uncc.edu

CURRENT POSITION

- **Associate Director of the Charlotte Research Institute** (CRI), July 2007 to present, and **Adjunct Professor of Physics** at UNC Charlotte, January 2011 to present.
  The CRI Associate Director Reports to Dr. Robert G. Wilhelm, Vice Chancellor for Research and Economic Development and CRI Executive Director. General responsibilities include growth of university research efforts, development of university-industry partnerships, and support to economic development agencies for the Charlotte region. Currently 15 multidisciplinary research centers/institutes and 3 research initiatives spanning all science, computing and engineering departments at UNC Charlotte operate under the CRI umbrella. CRI also manages development of the 102 acre Millenial Campus including 10 existing buildings and 2 under construction. CRI operates a business incubator and leads regional entrepreneurship programs.

EXPERIENCE SUMMARY

- Dr. Barry Burks is a senior research manager with over 30 years experience working in a variety of technical fields spanning science, technology, engineering and mathematics. He carries a broad perspective based on experience developing technology, leading projects and managing programs for the Department of Energy, Department of Defense, NASA, commercial nuclear industry, automated manufacturing industry, and most recently university-based applied research. Since 2007 his focus has been on growth of research and research infrastructure at UNC Charlotte and connecting the UNC Charlotte research enterprise to the business community in North Carolina as well as national and international businesses.

- Many projects for DOE and DOD required security clearance. Dr. Burks has held the DOE Q Clearance and the DOD Top Secret Clearance (reinvestigation currently in process).

EDUCATION

- Ph.D. in Experimental Nuclear Physics (1983) and M.S. in Nuclear Physics (1980), University of North Carolina at Chapel Hill, Department of Physics and Astronomy.

- B.S. in Physics and Mathematics (1977), Summa Cum Laude, Lynchburg College, Lynchburg, VA.

WORK EXPERIENCE

Charlotte Research Institute, UNC Charlotte, Charlotte, NC 2007-present

- Specific responsibilities include assisting researchers to identify research funding opportunities, marketing UNC Charlotte capabilities and accomplishments to prospective research partners, production of professional events and topical conferences, management of operational aspects of CRI and the Millenial Campus including personnel supervision, execution of research agreements, execution of space and laboratory use agreements, contracting, operation of multidisciplinary research centers, business development, construction project management, development and access to the Millenial Campus and growth of entrepreneurship programs. Operational responsibility also extends to the CRI branch office at the North Carolina Research Campus in Kannapolis.

- **Several specific activities or accomplishments are listed below:**
  - Member of Leadership North Carolina Class XIX (2011-2012)
  - UNC Charlotte participant in the UNC General Administration (GA) Economic Transformation Council quarterly meetings from October 2007 to present
  - Proposal reviewer for UNC GA 2008 Technology Commercialization Grants
  - Editor in Chief and contributing author for the CRI 2006-07 and 2007-08 Annual Research Highlights Reports and the 5 editions of the Millenial Magazine, a periodical research highlights report (published once per semester) that replaced comprehensive annual reports
  - Conference Chair of the American Nuclear Society Third Joint International Conference on Emergency Preparedness & Response and Robotics for Hazardous Environments, Knoxville, TN, August 7-10, 2011
  - Conference Chair and organizer for the Fifth International Hydrail Conference, June 11-12, 2009
  - Chair of Selection Committee for recruitment and hiring of the Executive Director of the Ben Craig Center, a business incubator for high growth, technology based businesses
  - Editorial Advisory Board – Impact Advancing the Business of Biotechnology and Life Sciences, a technical magazine that was launched in 2008
  - Member of the Intellectual Property Committee for the Cannon Research Center of the Carolinas Healthcare System
  - Member of the UNC Charlotte Intellectual Property Committee
  - Member of the UNC Charlotte Engagement Council
  - Member of the UNC Charlotte Quality Enhancement Plan Steering Committee
  - Completed the Basic Economic Development Course at the UNC Chapel Hill School of Government, August 3-6, 2009
  - Faculty Advisor to the TRIANGLE Fraternity at UNC Charlotte. TRIANGLE is restricted to students majoring in science, engineering or architecture
  - CRI Project Manager for construction of the Grigg Hall Applied Optics Center Completion. Project was jointly funded by UNC Charlotte (State of NC funds) and the US Department of Commerce Economic Development Administration
  - Member of Advanced Manufacturing Steering Committee for Centralina Council of Governments. Assisted to design and launch an Advanced Manufacturing web site highlighting resources and opportunities in the Charlotte region
  - Provided assistance to numerous economic development agencies including: Charlotte Regional Partnership, Charlotte Chamber of Commerce, and many of the 16 counties that comprise CRP
  - Assisted UNC Charlotte research centers to identify research funding opportunities and develop proposals for Federal agencies, national laboratories and private companies

- Supervised Organizational Science Doctoral Student conducting a study entitled "Understanding Partnership in University-Industry Research Centers: A Case Study of the Charlotte Research Institute"
- Judged Graduate Student Poster Competitions at the 6th, 7th, and 8th annual Charlotte Biotechnology Conferences.
- Judged Graduate Student Research Fair presentations at the 2009, 2010, and 2011 competitions and committed for 2012 as well
- Member of Steering Committee for Innoventure 2008, 2009, 2010 and 2011 conferences and three workshops on Advanced Materials, Sustainable Design, and Enterprise Systems Computing and made presentations highlighting UNC Charlotte research and technologies available for licensing
- Serve on Founding Board for the Catawba River District K-20 Learning World
- CRI Project Manager for construction of the PORTAL Building. PORTAL is a 100,000 sf building that will house the business incubator, space for research partners and a 10,000 sf SCIF for classified research
- Organized the NC Defense Business Association Breakfast with a Prime event held October 19, 2011 at UNC Charlotte
- Organizing a second UNC Defense Opportunities Workshop to be held at UNC Charlotte in March 2012
- Judge for the College of Engineering Senior Design Expo
- Judge for selection of Semi-Finalists and Finalists for the Five Ventures Business Plan competition in 2008, 2009, 2010, 2011 and 2012

PRIOR WORK EXPERIENCE

TPG Applied Technology, Knoxville, TN 1997-2007

- **Vice-President (1997-2001), President (2001-2007) and Senior Technical Program Manager (1997-2007)** of small business that specialized in design, fabrication, installation and operation of equipment for nuclear facilities and design and construction services for classified/high security facilities and commercial facilities requiring high quality standards. Dr. Burks and two partners founded TPG in 1997 and grew the company from a handful of employees to over 30 when the company was sold in 2000. Dr. Burks remained with the company becoming President in August 2001 and CEO in January 2002 and leading growth of the company to over 75 employees with more than $10M in annual revenues.

- **Significant Project Positions held at TPG:**
  - June 2004 to May 2007, **Project Manager** for 3 facility upgrade projects in the classified area of the Y-12 National Security Complex. Projects totaled over $10M with largest being over $8M.
  - October 2003 to May 2004, **Principal Investigator** – DOE Program Research and Development Agreement, Investigation of Remediation Technologies for the Hanford 618-10 and 618-11 Burial Grounds, $0.3M.
  - October 2003 to November 2005, **Project Manager** – four facility construction/renovation projects totaling $8M performed at a classified site under contract to Hill Air Force Base

- July 2002 to November 2004, **Project Manager and Technical** Lead – Portable Manipulator Systems Project for the Oak Ridge National Laboratory Spallation Neutron Source, $0.85M.
- October 2001 to December 2002, **Principal Investigator** – DOE Industry Program Demonstration of Mercury Removal from Soils Using Electro-Chemical Remediation Technologies, $1.2M.
- October 2002 to March 2003, **Principal Investigator** – SBIR/STTR Program, Multi-Manipulator Telerobotic Task Control Project, $0.3M.
- May 2000 to July 2001, **Project Manager** – three factory automation projects for General Electric plant in Morristown, TN, $0.3M.
- August 1998 to December 2005, **Tank Waste Retrieval Manager** – Melton Valley TRU/Alpha Waste Treatment Project at Oak Ridge National Laboratory, $300M total project.
- June 1997 to September 2002, **National Coordinator** of Robotics Technology Development Activities for Tank Waste Remediation Applications for the DOE Office of Science and Technology Robotics Crosscutting Program (continuation of position held at ORNL)
- June 1997 to December 2002, **Technology Development Coordinator, Project Manager for Remote Systems Development and Waste Removal Operations Manager** for the ORNL Gunite and Associated Tanks (GAAT) Treatability Study Project and ORNL GAAT Remediation Project (continuation of position held at ORNL), total project budget $100M.
- June 1997 to September 2002, **Principal Investigator** – ORNL Robotics and Process Systems Division Tanks Technology Development Activities (continuation of position held at ORNL)
- June 1997 to September 2002, **Robotics Technology Integration Manager**, DOE Office of Science and Technology, Tanks Focus Area Program (continuation of position held at ORNL)

Oak Ridge National Laboratory, operated for DOE 1983 - 1997
By Lockheed Martin Energy Research Corp, Oak Ridge, TN

- From December 1983 through May 1997 Dr. Burks held several positions at Oak Ridge National Laboratory starting as a **Postdoctoral Research Associate** in the Physics Division and then progressing through several staff and management positions in other Divisions.

- **ORNL Robotics and Process Systems Division** 1990 – 1997
  - August 1994 to May 1997, **Environmental Restoration and Waste Management Technology Applications Manager**
  - January 1990 to May 1997, **Group Leader** – Telerobotic Sensors and Electronics Group, Lead projects funded by Department of Energy, Department of Defense, and NASA
  - January 1990 to May 1997, Initiated six activities described above as continuation projects at TPG
  - October 1991 to May 1997, **Principal Investigator** – ORNL Retrieval and Closure activities within the DOE Tanks Focus Area and predecessor organization Underground

Storage Tanks Integrated Demonstration. Member of the USTID Technical Support Group
  - October 1991 to September 1994, **Project Manager** – RPSD Buried Waste Retrieval activities funded by the U.S. Army, DOE Buried Waste Integrated Demonstration, and Robotics Technology Development Program Buried Waste application area. Member of the BWID Retrieval Technical Support Group
  - December 1990 to September 1993, **Project Manager** for development and deployment of remote systems at the DOE Fernald site including development and field deployment of the topographical mapping system at the K-65 Silos.

- **ORNL Central Management Organization** 1988-1989
  - February 1988 to December 1989, **Technical Assistant to the ORNL Associate Director for Physical Sciences**, assisted manager of R&D program that totaled more than $100M annual budget and more than 1000 people. R&D Divisions included Analytical Chemistry, Chemistry, Engineering Physics and Mathematics, Metals and Ceramics, Physics, and Solid State. Member of the ORNL Senior Planning Group and Publications Award Committee.
  - June 1989 to December 1989, **Director of the Office of Guest and User Interactions**, responsible for coordination of ORNL's 13 User Facilities including establishment of guest and user cooperative research agreements, foreign national visits and assignments. Nmaed Director at the creation of the OGUI and played a key role in the initiation and establishment of this organization.

- **ORNL Engineering Physics and Mathematics Division** 1987-1989
  - March 1987 to December 1989, **Manager – Machine Intelligence Laboratory** at the Center for Engineering Systems Advanced Research (CESAR). Lead research in mobile robot design and operation, sensing techniques for machine intelligence applications.
  - **Project Manager** – development of two autonomous robotic testbeds called the Hostile Environment Robotic Machine Intelligence Experiment Series (HERMIES-IIB and HERMIES-III)

- **ORNL Physics Division** 1983 – 1987
  - December 1983 to February 1987, **Research Associate** – conducted studies of nuclear structure and reactions using medium energy proton scattering at the Los Alamos Meson Physics Facility and Tri-Universities Meson Facility (Vancouver, British Columbia) and heavy ion reactions at the ORNL Holifield Heavy ion Research Facility and the GANIL accelerator facility in Cannes, France. **Principal Investigator** for numerous nuclear physics experiments. Designed, built and tested large scale detector systems for detection of wide range of charged particles, neutrons and gamma rays.

University of North Carolina at Chapel Hill 1977 - 1983
Department of Physics and Astronomy

- August 1983 to December 1983, **Visiting Lecturer** – Taught undergraduate physics, supervised laboratory instructors and graduate research projects at Triangle Universities Nuclear Laboratory (TUNL) as a one semester replacement for faculty on sabbatical

- August 1977 to August 1983, **Graduate Research Assistant** – Performed low energy nuclear physics experiments at TUNL 5 semesters and 4.5 summers

- August 1977 to December 1979, **Graduate Teaching Assistant** – taught undergraduate astronomy laboratory courses 5 semesters

Guilford College, Greensboro, NC 1982-1983
Physics Department

- August 1982 to May 1983, **Instructor** – Taught undergraduate Physics and Mathematics courses as a one year replacement for a faculty member on sabbatical. Also continued to perform nuclear physics research at TUNL.

Babcock and Wilcox Lynchburg Research Center, 1976 -1977
Radiochemistry Division, Lynchburg, VA

- May 1976 to August 1977, **Research Associate** – Research related to the design of a liquid waste purification system, radiochemical analysis, monitoring of reactor fuel bundle degradation, and computer modeling of nuclear fuel fabrication processes

Lynchburg College, Lynchburg, VA 1973 -1976
Physics Department

- August 1973 to May1976, **Laboratory Instructor** – taught undergraduate physics laboratory courses and assisted Professor Shirley Rosser to write a general physics text book by preparing figures and preparing solutions to chapter problems.

PROFESSIONAL ORGANIZATIONS MEMBERSHIP AND SERVICE

- Member of American Nuclear Society (ANS), Robotics and Remote Systems Division (RRSD), 1991 to present
- Member of ANS RRSD Executive Committee, 1999 to 2006, Treasurer, 2001-2002, Secretary, 2002-2003, Vice-Chair/Chair Elect, 2003-2004, Chair 2004-2005, Ex-Officio Member 2005 – 2006
- General Chair of the ANS Third Joint International Topical Meeting on Emergency Preparedness & Response and Robotics for Hazardous Environments, Knoxville, TN August 7-10, 2011
- ANS RRSD Technical Program Chair, 1995-1996
- ANS RRSD Session Organizer and Chair: 1993, 1995, 1999, 2001, 2004, and 2006 Topical Meetings on Robotics and Remote Systems
- Member of ANS Fuel Cycle and Waste Management Division, 1995 to present
- Member of Institute of Electrical and Electronics Engineers, Robotics and Automation Society, 1987 to present

- Editorial Advisory Board of IMPACT Magazine – Advancing the Business of Biotechnology and Life Sciences, 2008 to present
- Member of American Physical Society, Nuclear Physics Division, 1980 to 1998
- Member of Society of Mechanical Engineers, Robotics International, 1987 to 1990
- Member of East Tennessee Environmental Business Association, Small Business Committee, 2002 to 2007

PATENTS, HONORS, AND AWARDS

- Recipient of the ANS RRSD 2008 Ray Goertz Award, for outstanding contributions to the field of nuclear applications of Robotics and Remote Systems
- Technical Achievement Award, Gunite and Associated Tanks Project, September 2000
- Viking Award of Excellence – Gunite and Associated Tanks Project, 1997
- Martin Marietta Technical Achievement Award (1993)
- Martin Marietta Significant Event Awards (1987, 1991, 1992, 1993)
- Best Paper Award, American Nuclear Society, Spring Annual Meeting (June 1992)
- Selected 1976-77 Richard Sommerville Scholar, highest academic honor at Lynchburg College, graduated Summa Cum Laude GPA = 3.92/4.0
- Selected a member of Blue Key National Men's Honor Fraternity, Lynchburg College Honor Society, Sigma Pi Sigma National Physics Honor Society, Chi Beta Phi National Science Honor Society, Dixie Conference Academic All-American Cross Country and Track
- Recipient of Greater Lynchburg Area Academic Honor Scholarship, 4 year full tuition scholarship at Lynchburg College
- Invention Disclosures filed with Department of Energy
  - Remote Vehicle Survey Tool (May 1992)
  - Computer Aided Design Tool for the Dynamic Schematic Display Language (July 1994)
  - Position and Orientation Tracking System (May 1996), United States Patent #5,748,321 Awarded May 1998
- Patent application submitted in 2003 for Early Detection System for Breast Cancer, rejected in 2006, similar to prior patent

PUBLICATION SUMMARY

- Publications include topics in nuclear physics, robotics, remote systems, environmental remediation, sensor development and instrumentation, and management of science parks (see attachment).

• Refereed Journal Articles	39
• Conference Papers	125
• Technical Reports and other miscellaneous publications	36
Total	200

REFERENCES:

Current Supervisor:
Dr. Robert G. Wilhelm
Vice Chancellor for Research and Economic Development and CRI Executive Director
University of North Carolina at Charlotte
Grigg Hall Room 258
9201 University City Blvd.
Charlotte, NC 28223-0001
Phone: (704) 687-8428
Email: rgwilhel@uncc.edu

Dr. William R. Hamel, Chair
University of Tennessee at Knoxville
Mechanical, Aerospace and Biomedical Engineering Department
414 Dougherty Engineering Building
1512 Middle Drive
Phone: (865) 974-6588
Email: whamel@utk.edu

Dr. Mark W. Noakes
Robotics and Energetic Systems Group
Oak Ridge National Laboratory
P.O. Box 2008 MS6305
Oak Ridge, TN 37831-6305
Phone: (865) 574-5695
Email: noakesmw@ornl.gov

Patricia Gail Keene, Business Office Manager
Charlotte Research Institute
University of North Carolina at Charlotte
Grigg Hall Room 267
9201 University City Blvd
Charlotte, NC 28223-0001
Phone: (704) 687-8286
Email: pgkeene@uncc.edu

Dr. Reid L. Kress, PE
Senior Technical Advisor
National Security Technology Center
Y-12 National Security Complex
Oak Ridge, TN 37831
Phone: (865) 574-4849 office, (865) 356-2621 cell
KRESSRL@y12.doe.gov

John DeGregory
U.S. Department of Energy
EM-21, Forrestal Building
1000 Independence Avenue SW
Washington, DC
Phone: (202) 586-5842
Email: John.DeGregory@EM.DOE.GOV

Cavanaugh Mims, President
Visionary Solutions, LLC
1010 Commerce Park Drive, Suite D
Oak Ridge, TN 37830
Phone: (865) 482-8670
Email: cmims@vs-llc.com