Eddie F. Holik, III (Trey)

2908 River Oaks Circle, Bryan, Texas 77802 · (325)450-6778 · HolikT@hotmail.com

EDUCATION

Texas A&M University

Doctorate in Physics "Stress Management as an Enabling Technology for High-Field Dipoles"
December 2013 **GPA – 4.0**

Masters in Physics "Simulation Results of an Inductively-Coupled RF Plasma Torch in Two and Three Dimensions for Producing a Metal Matrix Composite for Nuclear Fuel Cladding"
December 2008 **GPA – 4.0**

Angelo State University

Bachelor of Science in Physics **May 2006** **GPA – 4.0**
Bachelor of Science in Mathematics **May 2006** **GPA – 4.0**

TEACHING EXPERIENCE

Teaching Assistant: Served as a Teaching Assistant in 2006 and 2007 for freshmen mechanics and E&M. In this capacity I proctored exams and taught a traditional recitation and lab for four sections of 20 to 30 students each semester. I also served as a Visual Physics TA for mechanics where the recitation and lab were combined. The Visual Physics curriculum encourages team work and inquiry-driven learning. Visual Physics classes use a camera and a computer to track projectiles and plot trajectories in EXCEL which aides in kinematic understanding.

NSF GK-12 PEER Fellowship: In 2009-10 I served as a NSF GK-12 PEER teaching fellow for 10 hours per week in the classroom in urban and rural schools dispersed in 3 different counties. The program goal was to increase middle school student interest in the STEM fields by introducing scientists into the classroom. The fellow was responsible for preparing lessons that would captivate attention and increase understanding with the hope of creating future STEM professionals. Two such lessons I created were awarded as "Golden Nuggets" by program directors with one being published in a PEER Perspectives Magazine. I also mentored an undergraduate to assist in constructing middle school lessons.

Undergraduate Mentorship: In the laboratory I have also mentored 5 undergraduates for constructing and testing capacitive stress transducers, machine shop experience, profiling and calibrating a reaction bake furnace, fabricating precision mica and s-glass insulation pieces, and researching Nb_3Sn superconductor heat treatments. These students have won TAMU Research Week Awards and one student was a 2011 Goldwater Scholar finalist.

TAMU Physics Festival: Designed and presented a magnetohydrodynamics demonstration with salt water. I have also presented Elihu Thomson's Jumping ring demo, a gravitational well demo, a square bicycle wheel demo, and a bicycle generator demo.

Texas Science Olympiad: Wrote and proctored the Shock Value event for the Texas Science Olympiad in 2010 and 2011. I also held clinics for over 40 Texas high school teachers on how to instruct their students for the Science Olympiad competition.

Tutoring Experience: I tutored San Angelo ISD middle school students for 4 hours per week from 2002 to 2004. I volunteered at Westminster Presbyterian Church as a tutor for Bryan High School students in 2006-07. I also tutored calculus and statistics in 2008 at TAMU.

RESEARCH

Faculty Research with Dr. Peter McIntyre (TAMU)

- Superconducting magnet design and construction
  - Ph.D Dissertation in Stress Management Technology
  - Received TSAPS Student Presentation Award and Travel Award
  - Simulation; Magnetics with Opera® Vector Fields, Thermal and Mechanical analysis with ANSYS®, Quench with QUENCH / QUCERN
  - FEI Quanta 600 FE-SEM Nb_3Sn experience
- United States Particle Accelerator School at UCSC, UNM, and UT
  - Linear, synchrotron, and cyclotron type accelerators
  - Beam transport design and insertion devices
  - Plasma physics and collective effects in beams
  - Superconducting magnet design
  - 9 credit hours and A+ grade average
- RF Plasma torch system
  - Simulation of RF plasma with FLUENT®
  - Completed design for a laminar flow RF Plasma torch
  - Received TSAPS Student Presentation Award
- Research of a new MMC nuclear fuel cladding
  - AFCI/GNEP DOE Fellow 2007-08
  - Published Masters Thesis

Faculty Research with Dr. Toni Sauncy (ASU)

- Studied Photoluminescence of InGaAs quantum wells
- Characterized CCD and InGaAs photon detectors
- SpectraMAX and LabVIEW software

HONORS

Texas A&M University

Phi Kappa Phi Honor Society 2013, National Scholars Honor Society 2007

Angelo State University

ASU Presidential Award May 2006, Carr Research Fellow May 2006, Sigma Pi Sigma Physics Honor Society April 2005, Pi Mu Epsilon Mathematics Honor Society March 2004, Alpha Chi National Honor Society September 2004

GRANTS

Texas A&M University

NSF GK-12 PEER Fellow 2009-10, Graduate Research Assistant 2009-13, AFCI/GNEP DOE Fellow 2007-08, Teaching Assistant 2006-07

Angelo State University

Carr Student Research Grant for spectroscopy measurements 2005-06, Ray Dawson Alumni Scholarship in Physics 2005-06, Dr. Merrill W. Everhart Scholarship in Science 2004-05, Special Academic Scholarship in Applied Physics 2002-06, Carr Academic Scholarship 2002-06, United States Achievement Academy Grant 2002

MEMBERSHIP

American Physical Society 2004-13, *Science Olympiad Event Director* 2010-11, *Graduate Teaching Academy* 2006-07, *Student Senator* 2005-06

PUBLICATIONS

1) K. Melconian, S. Assadi, K. Damborsky, E.F. Holik, J. Kellams, P. McIntyre, N. Pogue, and A. Sattarov, "Design and development of an MgB_2–based sector dipole and beam transport channel for a strong-focusing cyclotron," Submitted to Advances in Cryogenic Engineering from the Cryogenic Engineering Conference, Anchorage, AK, June 2013.
2) E.F. Holik, R. Garrison, N. Diaczenko, T. Elliott, A. Jaisle, A.D. McInturff, P.M. McIntyre, A. Sattarov, "Construction Challenges and Solutions in TAMU3," Submitted to Advances in Cryogenic Engineering from the Cryogenic Engineering Conference, Anchorage, AK, June 2013.
3) E.F. Holik, E.P. Benson, R. Garrison, N. Diaczenko, T. Elliott, A. Jaisle, A.D. McInturff, P.M. McIntyre, A. Sattarov, "Construction and Component Testing of TAMU3, A 14 Tesla Stress-Managed Nb_3Sn Model Dipole," Advances in Cryogenic Engineering, **1434**, 7, June 2012.
4) C.P. Benson, E.F. Holik, A. Jaisle, A.D. McInturff, P.M. McIntyre, "Improved Capacitive Stress Transducers for use in High-Field Superconducting Magnets," Advances in Cryogenic Engineering, **1434**, 8, June 2012.
5) E.F. Holik, A.D. McInturff, E.P. Benson, R. Garrison, N. Diaczenko, T. Elliott, A. Jaisle, P.M. McIntyre, A. Sattarov, "Current progress of TAMU3: A Block Coil Stress-Managed High Field (>12T) Nb_3Sn Dipole," in Proceedings of the 2011 Particle Accelerator Conference, New York, New York, pp. 1163, April 2011.
6) P.M. McIntyre, K. Damborsky, E.F. Holik, F. Lu, A.D. McInturff, N. Pogue, A. Sattarov, E. Sooby, "20T Dipoles and Bi-2212: The Path to LHC Energy Upgrade," IEEE/CSC & ESAS European Superconductivity News Forum (ESNF), No. 16, April 2011.
7) A. McInturff, R. Blackburn, N. Diaczenko, T. Elliott, E.F. Holik, A. Jaisle, P. McIntyre, and A. Sattarov, "Current Status of the Texas A&M Magnet R&D Program," IEEE Transactions on Applied Superconductivity **21** (3), August 2010
8) L. Johnson, E.F. Holik, B. Sanchez, V. Traweek, et al., "Peer Perspectives Volume II: A Novel Approach to Quality GK-12 Interactions," a TAMU Department of Veterinary Medicine publication, Fall 2010
9) E.F. Holik (2008) "Simulation Results of an Inductively-Coupled RF Plasma Torch in Two and Three Dimensions for Producing a Metal Matrix Composite for Nuclear Fuel Cladding," Thesis, Texas A&M University

PRESENTATIONS

1) Cryogenic Engineering Conference, June 17-21, 2013, "Stress Management Construction Difficulties and Solutions in TAMU3," Oral Presentation, 3EOrE1-04
2) Cryogenic Engineering Conference, June 17-21, 2013, "Superconducting RF Cavity for a Strong Focusing Cyclotron designed to destroy Nuclear Waste," 2EOrC3-04
3) Applied Superconductivity Conference, October 7-15, 2012, "Construction of TAMU3, 14 T Nb_3Sn Dipole with Stress Management in its Windings," Portland, Oregon, Poster
4) Joint Spring 2012 Meeting of the Texas Sections of the APS, AAPT, and SPS, March 22-24, 2012, San Angelo, TX. Oral Presentation: "Current Progress in Fabrication of a 14 Tesla Nb_3Sn Dipole"
5) Joint Fall 2011 Meeting of the Texas Sections of the APS, AAPT, and SPS, October 6-8, 2011, Commerce, TX. Oral Presentation: "Stress Management in TAMU3, a 14 Tesla Nb_3Sn Model Dipole"

6) YESS Energy Symposium: Alternative Energies – A Global Perspective, January 10-12, 2011, College Station, TX. Poster Presentation: “Metal Matrix Composits of SiC in High Temperature Steels for Generation IV Reactor Materials”
7) Joint Fall 2010 Meeting of the Texas Sections of the APS, AAPT, Zone 13 of SPS, October 21-23, 2010, San Antonio, TX. Oral Presentation: “Construction of TAMU3: a 14 Tesla Nb_3Sn Model Dipole”
8) Joint Fall 2009 Meeting of the Texas Sections of the APS, AAPT, and SPS, October 22-24, 2009, San Marcos, TX. Oral Presentation: “TAMU3: High-Field Superconducting Dipole Development for Future Hadron Colliders”
9) Texas & Four Corners of the American Physical Society Joint Fall 2008 Meeting, October 17-18, 2008, El Paso, TX. Oral Presentation: “Simulation results of a Plasma Torch for Metal Matrix Composite Production in Nuclear Fuel Cladding”
10) Joint Fall 2007 Meeting of the Texas Sections of the APS, AAPT, and SPS, October 18-20, 2007, College Station, TX. Oral Presentation: “RF Plasma Torch System for Metal Matrix Composite Production in Nuclear Fuel Cladding”
11) Joint Spring 2006 Meeting of the Texas Sections of the APS, AAPT, and SPS, March 23-25, 2006, San Angelo, TX. Oral Presentation: “Addressing Temperature Issues and Dependence for InGaAs/GaAs Quantum Well Photoluminescence”