

Dr. Carlos J. Gutierrez
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<u>University</u>	<u>Major/Area</u>	<u>Degree</u>	<u>Year</u>
Univ. of Dallas	Physics	BS	1983
Johns Hopkins U.	Physics	M.A/PhD	1987/1990
Naval Research Lab	Materials Physics	NRC Postdoctoral Associate	1990-1992

Appointments

Texas State University	Professor	9/00-Present
AMD Faculty Intern (Austin)	Materials Analysis (including etch process development at AMD Fab 25)	Spring 02
Southwest Texas State University	Associate Professor	9/97-8/00
Southwest Texas State University	Assistant Professor	9/92-8/97

Refereed Publications since 1998 (42 total):

- (1) "TiN Coatings for Microfabricated Cantilevers used in Atomic Force Microscopy", K.P. Wiederhold, Y. Yamaguchi, A. Ayala, M. Matheaus, C.J. Gutierrez and H.C. Galloway, *Journal of Vacuum Science and Technology B* 18, pp. 1182-1186 (May/June 2000)
- (2) "Magnetic Thin Films", C.J. Gutierrez, "John Wiley Encyclopedia of Electrical and Electronics Engineering" Supplement 1 (edited by John G. Webster, ISBN 0-471-35895-9, 1999), pp. 312 – 325
- (3) "Optical Isolator Based on Nonreciprocal Phase Shift with Fiber Mach-Zehnder Interferometer", J. Fujita, M. Levy, R.M. Osgood, Jr., M. Randles, C.J. Gutierrez and R. Villarreal, *Appl. Phys. Lett.* 75, 998-1000 (1999)
- (4) "Metastable Permalloy Monoxide Based Spin Valves and Pseudo Spin Valves", P. Perera, A. Ayala, C.J. Gutierrez, *J. Appl. Phys.* 85 , 1621-1623 (1999)
- (5) "Brillouin light scattering study of magnetic coupling in CoFe/Mn/CoFe", M. Chirita, G. Robins, R. L. Stamps, and R. Sooryakumar, M. E. Filipkowski, C.J. Gutierrez and G. A. Prinz, *Physical Review B* Vol. 58, 869-875 (1998)
- (6) "The Magnetic and Structural Properties of Metallic and Nitride-doped (Co₉₀Fe₁₀/Cu) Multilayers", R. Selestino, P. Perera, A. Ayala, D. Scott, R.W. Dail, D. Medrano, C.J. Gutierrez and M.J. Sablik, *IEEE Trans Mag.* 33, 3664-3666 (1998)
- (7) "The Influence of Ion Beam Bombardment on the Properties of Permalloy Films and Multilayers", R. Selestino, R. Dail, L. Tristan, M. Khater, C.J. Gutierrez and Steve Michel, *J. Appl. Phys.* Vol. 81, 5304-5306 (1998)

Publications in Progress:

- (1) "The Influence of Ion Beam Sputtering Geometry on Metastable (Ni₈₁Fe₁₉)O / Ni₈₁Fe₁₉ Exchange Biased Bilayers", Anup K. Bandyopadhyay, Steven E. Rios, Albert Tijerina, Carlos J. Gutierrez (accepted 5/03 in the *J. of Alloys and Compounds* – in press)
- (2) "Synergetic Radical Atom and Ion Beam Strategies for Processing Artificially Engineered Epitaxial Oxide Films", Anup K. Bandyopadhyay, Steven E. Rios, and Carlos J. Gutierrez (submitted to *Applied Physics Letters* – in review)
- (3) "Glancing Incidence X-Ray Characterization of Rapid Thermal Processed Cobalt Silicide Films", S.G. Fritz, S.E. Rios, A.K. Bandyopadhyay, C.J. Gutierrez, D.P. Chesire, S. Merchant, (submitted to the *Journal of Vacuum Science and Technology* – in review)
- (4) "The Fabrication of Bi-YIG Films using Reactive Ion Beam Sputtering and Rapid Thermal Annealing", C.J. Gutierrez, A. Bandyopadhyay, M. Levy, S. Rios, A. Tijerina, S.G. Fritz and D. Larison (submitted to the *Journal of Applied Physics* – in review)
- (5) "Epitaxial Metastable (Ni₈₁Fe₁₉)O / Ni₈₁Fe₁₉ Exchange Biased Bilayers using Radical Oxygen and Ion Beam Processing", Anup K. Bandyopadhyay, Steven E. Rios, Albert Tijerina, Carlos J. Gutierrez (submitted to the *Journal of Magnetism and Magnetic Materials* – in review)

Synergistic Activities

- i. Courses Prepared at SWT (relevant to submitted proposal)

- (1) PHYSICS 4340 (Materials Physics Laboratory) & PHYS 5324 (Thin Film Materials Laboratory):
The PI helped create and teach these undergraduate (with NSF-ILI support) and masters-level (with NSF-DMR support) lecture-lab courses introducing students to concepts and techniques relevant for the microelectronics, magnetic storage and MEMS industries. Students pursue collaborative lab projects using techniques like sputtering, XRD, SEM/EDS, AFM, ellipsometry, magnetometry and electrical measurements.
- (2) PHYSICS 5328 (Device Physics): The PI helped create this new SWT Physics course to provide students with important device operation background for careers in the semiconductor, MEMS and magnetic device industries. It is open to masters program students and advanced undergraduates (for graduate credit)

ii. Service to Scientific Community

- (1) Treasurer (2002) and AdCom, Conference on Magnetism and Magnetic Materials (2001-2004)
- (2) Local Chair, Joint Intermag-Conference on Magnetism and Magnetic Materials, 1/5/01, San Antonio, TX
- (3) Local Organizer, 2002 and 2003 Semiconductor Chemical Control and Characterization (SC3M) Workshop (October 2002 and 2003, Texas State University, San Marcos, TX)
- (4) Board of Directors Member, Nanoparticles Application Center at Texas State University

iii. Community Service:

- (1) Faculty Advisor for SWT chapter of the Society of Mexican-American Engineers and Scientists (1993-present)
- (2) NSF AMP Advisory Panel Faculty Member, SWT component of the U. Houston NSF-LSAMP project
- (3) Advisory Board Member, SWT Kellogg Foundation ENLACE C-STEP program focused toward increasing the number of Central Texas Hispanics completing high school and college education
- (4) Life Member of the Society for the Advancement of Chicanos and Native Americans in Science (SACNAS), past member of the National Board of Director 1994-1997
- (5) Advisory Member, San Marcos Consolidated Independent School District (Math & Science Magnet School)
- (6) Member, American Physical Society Committee on Minorities (2003 – 2005)

iv. Awards and Honors

- (1) 2001 SWT Presidential Award for Creative and Scholarly Activity
- (2) Awarded 1998 SWT Faculty Advisor of the Year for service to the SWT MAES (Mexican American Engineers and Scientists) Student Chapter.
- (3) Awarded “Most Promising Young Scientist” at the Hispanic Engineering National Achievements Awards Conference (HENAAC), 10/96
- (4) Selected for a National Science Foundation DMR-CAREER (Faculty Early Career Development) award, 5/95

Collaborators & Other Affiliations

i. Collaborators (other than listed IMR investigators)

Tim Hossain (Advanced Micro Devices), Larry Larson (SEMATECH), Ed Strickland (SEMATECH), Howard Huff (SEMATECH), Daniel Chesire (Lucent), Sailesh Merchant (Lucent), Martin Sablik (Southwest Research Institute), Mark Filipkowski (U Arkansas), Yves Idzerda (Montana State), Robert Mayanovic (SW Missouri State U.), Miguel Levy (Michigan Tech), R. Sooryakumar (OSU)

ii. Past SWT Postdocs and Professional MS Thesis Students: (SWT does not grant a Ph.D. in Physics)

P. Perera (Seagate – former postdoc), Marwan Khater (Ph.D., UT Dallas - etch process engineer at IBM NY), Luis Tristan (Etch Engineer, GaSonic), Robert Dail (Software Engineer, Cadence Design Systems), Ray Selestino (Thin Films Engineer, AMD), David Medrano (Physics Instructor: San Antonio Community College), John Griffith (Engineer, NASA JSC), Mike Matheaus (Etch Engineer, Philips Semiconductor), Anival Ayala (CVD engineer, AMD), Albert Tijerina (Rigaku Semiconductor USA), Matthew Langendorf (Cirrus Logic) – four ongoing MS thesis projects as of Fall03 (Shannon Fritz, Dana Larison, Steven Rios, Nelson White)

iii. Graduate and Postdoctoral Advisors

Dissertation Advisor:

Professor J.C. Walker (retired)

Department of Physics

Johns Hopkins University

Postdoctoral Advisor

Dr. Gary Prinz

Materials Physics Branch (Code 6345)

Naval Research Laboratory