

BIOGRAPHICAL SKETCH

Shireen Adenwalla

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A. Biographical Summary

Educational Background

1982 B.Sc., Physics, St. Xaviers College, Bombay University, India.

1989 Ph.D., Physics, Northwestern University, Evanston IL.

Professional Experience

2003-present Associate Professor, Dept of Physics, University of Nebraska-Lincoln

1998-2003 Research Assistant Professor, University of Nebraska-Lincoln

1996-1998 Visiting Faculty, Physics Dept. University of Nebraska-Lincoln.

1993-1996 Term Assistant Scientist at IPNS, Argonne National Lab

1989-1992 Post Doctoral Research Associate at Northwestern University

B. Research

Interests : Magnetization dynamics, coupling in magnetic multilayers, interactions between ferroelectric layers and between ferroelectric and ferromagnetic layers. Semiconducting boron carbide (structure, semiconducting properties, use as neutron detectors, tunnel junctions).

Publication Record

Author of over 70 articles in refereed journal and books; 1 patent; 4 invited presentations at national and international conferences and numerous other national and international presentations

Five Relevant Publications

1. Magnetization dynamics triggered by Surface Acoustic Waves S. Davis, A. Baruth and S. Adenwalla, App. Phys. Lett., **93**, 232507 (2010)

2. Phase Diagram of UPt_3 from Ultrasonic Velocity Measurements, S. Adenwalla, S.W. Lin, Q.Z. Ran, Z. Zhao, J.B. Ketterson, J.A. Sauls, L. Taillefer, D. G. Hinks, M. Levy and Bimal K. Sarma, Phys. Rev. Lett., **65**, 2298 (1990).

3. Domain overlap in antiferromagnetically coupled [Co/Pt]/NiO/[Co/Pt] multilayers, A. Baruth, L. Yuan, J. D. Burton, K. Janicka, E. Y. Tsymbal, S. H. Liou, and S. Adenwalla, Applied Physics Letters, **89**, 202505 (2006).

4. Enhanced blocking temperature and isothermal control of hysteresis loop shifts in Co/NiO/[Co/Pt] heterostructures with orthogonal easy axes A. Baruth and S. Adenwalla.. Phys. Rev. **B78**, 174407 (2008).

5. Oscillatory interlayer exchange coupling and its temperature dependence in [Pt/Co]₃/NiO/[Pt/Co]₃ Multilayers with Perpendicular anisotropy, Z.Y. Liu and S. Adenwalla, Phys. Rev. Lett., **91**, 037207, (2003).

Five Other Significant Publications

1. Ferroelectric control of magnetic anisotropy, A. Mardana, Stephen Ducharme and S. Adenwalla, Nanoletters, **11**, 3862 (2011).

2. Origin of the interlayer exchange coupling in [Co/Pt]/NiO/[Co/Pt] multilayers studied with XAS, XMCD, and micromagnetic modeling A. Baruth, D.J. Keavney, J.D. Burton, K. Janicka, E.Y. Tsymbal, L. Yuan, S.H. Liou and S. Adenwalla, Phys. Rev. B **74**, 054419 (2006).

3. Boron Carbide based solid state neutron detectors: the effects of bias and time constant on neutron detection, Nina Hong, John Mullins, Keith Foreman and S. Adenwalla J. Phys. D.: Appl. Phys. **43**, 275101 (2010).

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4. A New Class of Boron-Rich Solid-State Neutron Detectors B.W. Robertson, S. Adenwalla, A. Harken, P. Welsch, J.I. Brand, P.A. Dowben and J.P. Claassen, , Applied Physics Letters., **80**, 3644-3646 (2002).
5. Magnetoelectric effects in ferromagnetic cobalt/ferroelectric copolymer multilayer films, A. Mardana, Mengjun Bai, A. Baruth, Stephen Ducharme and S. Adenwalla, App. Phys. Lett., **97**, 112904 (2010).

C. Recent Collaborators (Last Four Years)

J.D. Burton, K. Janicka, E.Y. Tsymbal, L. Yuan, S.H. Liou S. Ducharme, Jihee Kim, Luis G. Rosa, S. Balaz, P. A. Dowben, B.W. Robertson, M. Langell –all of UNL
Hoydoo You and Dave Keavney -Argonne National Lab.
J. Borchers C. Majkrzak, J.A. Dura, K. O'Donovan, Brian Maranville-NIST, Gaithersburg
Valeria Lauter, Lowell Crow, ORNL.
Kyungwha Park, M. R. Pederson, L. L. Boyer-NRL
W. N. Mei, and R. F. Sabirianov (UNO), Seamus Curran and James Dewald (NMSU),

D. Graduate and Postdoctoral Advisors

Graduate: John B. Ketterson (Northwestern University)
Postdoctoral: Gian P. Felcher (Argonne National lab)

E. Graduate Students/Postdoctoral Scholars (Last Five Years)

Past Graduate Students: Peter Welsch,(M.S., 2001, engineer at Anelva), Zhongyuan Liu (Ph.D. 2003, faculty at Yongshan University, China)), Ellen Day (Ph.D. 2006, Allegheny General Hospital, University of Pittsburgh, image guided radiotherapy), Andrew Baruth (Ph.D. 2009, Post-doc with Chris Leighton, U. Minn)

Present graduate students: Abhijit Mardana, Nina Hong, Uday Singh, Keith Foreman

Postdoctoral Scholars: Mircea Chipara (faculty at University of Texas Pan American)

Past undergraduate students: Sam Davis (grad school, Northwestern), Michael Chu (REU, undergrad UCSD), Keith Foreman (grad school, UNL), John Mullins (Mayo Clinic, Ph.D. program in Biomedical Engineering), Dan Williams (University of Rochester, Ph.D. program in Optics), Matt Poulsen (law school at UNL) and Cole Weber (undergraduate at UNL)

Past high school students: David Kim, Darrin Lim (undergrad at Duke University)

F. Synergistic activities

1. Elementary school (at Morley Elementary) activities include
 - Magnetism-what are magnets, attraction and repulsion, compass needles, solenoid
 - Liquids,(floatation, miscible and immiscible liquids, filtration)
 - Periodic motion (pendulums, slinkies)
 - Sound (high and low frequencies, the effect of tension on the frequency of a plucked string, making of simple instruments and how to change frequencies)
 - Rotational and linear motion •Torques (concept of torque, balancing unequal weights)
 - Momentum and Pressure (pressure in a water column, making simple rockets)
2. Speaker at Women in Science workshop at UNL
3. Committee member for NSF funded ADVANCE grant to UNL.
4. Secretary/Treasurer of GMAG

Referee for Phys. Rev. Lett., Phys. Rev. B, J. App. Phys, App. Phys. Lett., J. Phys., Cond., Matt., J. Phys.D, JMMM and for neutron beamtime proposals at Oak Ridge and NCNR-NIST.