VITAE – GERMANO S. IANNACCHIONE

I. PERSONAL

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I.1. Education

Ph.D. Physics; *AC-Calorimetric Study of Liquid Crystal Phase Transitions in Restrictive Geometries*, D. Finotello advisor, Kent State University, 18 December 1993.
M.Sc. Physics; *Influence of Polydispersity and Curative/Resin Ratio on Molecular Mobility in Epoxy Networks*, E. von Meerwall advisor, University of Akron, 7 January 1990.
B.Sc. Physics; University of Akron, 31 May 1987.

I.2. Career

2015- now	*Research Member*, Integrative Materials Design Center (iMdc), Mech. & Mater. Eng., WPI.
2014- now	*Professor*, Department of Physics, WPI.
2023- 2026	*Division Director*, Division of Materials Research, MPS, NSF.
2020- 2023	*Expert*, Division of Materials Research, MPS, NSF.
2017- 2020	*Program Director*, Condensed Matter Physics, Division of Materials Research, MPS, NSF.
2018- 2019	*Program Director*, Biomaterials Program, Division of Materials Research, MPS, NSF.
2012- 2017	*Director*, Nuclear Science and Engineering (NSE) Program, Physics, WPI.
2012- 2016	*Director*, Master of Science in Physics for Educators (MPED) Program, Physics, WPI.
2006- 2016	*Head*, Department of Physics, WPI.
2013- 2014	*Member*, Board of Trustees, Spirit of Knowledge Charter School, Worcester, MA.
2004- 2014	*Associate Professor*, Department of Physics, WPI.
1998- 2004	*Assistant Professor*, Department of Physics, Worcester Polytechnic Institute (WPI).
1999- 2000	*Consultant*, Planar Systems / Standish Inc., Madison, WI.
1998- 1999	*Research Affiliate*, Center for Materials Science and Engineering, MIT.
1996- 1998	*Postdoctoral Research Associate*, Department of Chemistry and Center for Materials Science and Engineering, Massachusetts Institute of Technology (MIT).
1994- 1996	*Postdoctoral Research Fellow*, Department of Physics, Kent State University.
1989- 1993	*ALCOM Research Assistant*, Department of Physics, Kent State University.
1987- 1989	*Morton-Thiokol Research Associate* and *Graduate Assistant*, Department of Physics, University of Akron.

I.3. Teaching Summary

Courses:	**166** course sections, **4,165** students, **12,452** total credit hours
Projects:	MQPs: **71** projects completed with **122** students (B.S.).
	IQPs: **26** projects completed with **50** students.
Advising:	Academic (current): **5** undergraduate and **2** graduate students
	Research: graduated **11** Ph.D. and **14** M.S. Physics students

I.4. Scholarship Summary

ORCID: 0000-0003-0567-5843; Scopus ID: 7003567913; ResearcherID: H-2555-2017

Publications:	**98** refereed papers, **15** conference papers, and **6** book chapters.
	Web of Science: 106 works, citations = 3372 (3020 w/o self-cite), h-index = 30, cites/work = 31.81
	Google Scholar: 187 works, citations = 4481, h-index = 33, i10-index = 80
	ResearchGate: 184 works, citations = 3784, h-index = 32, Research Interest Score = 1876
Grants:	**15** funded (NRC, NIST, NSF, Research Corporation)
Presentations:	**41** invited seminar/colloquium and **121** contributed abstracts.

II. MAJOR ACHIEVEMENTS AND CONTRIBUTIONS

II.1 Major Achievements as Head of Physics at WPI

AY2004/05: Year prior to assuming the role of Head of Physics at WPI
Faculty = 12 T/TT and 0 NTT = 12 FTE (2 women)
Staff = 2 Administrative and 2 Technical
Ph.D. Student Support = 7 TA positions, 3 RA, 1 Fellowship, and 1 Self-funded
M.S. Student Support = all Self-Funded
Graduate Students = 12 Ph.D. And 1 M.S. = 13 total
Graduate Degrees = 4 Ph.D. and 3 M.S.
Physics and Engineering Physics Majors and Minors = 76 total
Undergraduate PH/PHE Degrees = 8 Majors and 3 Minors
Total Credit Hours Delivered = 5820

1. Conducted a comprehensive department self-study, formulated a department development plan, and conducted an extensive External Review of the department and the plan in AY2008/09. This was instrumental to the next several hires in Physics and in coordination with other departments across WPI.
2. Hosted an external review by the Committee on the Status of Women in Physics in 2014. This lead to significant culture changes in the department and was emulated across WPI.
3. Established Masters in Physics for Educators (**MPED**) program and helped establish the umbrella STEM Education Center at WPI. Approved by faculty and launched in Fall 2012. The MPED program is intended for educators seeking an advanced degree in Physics and obtain Professional Teaching License in MA. Founding director and lecturer (2012- 17).
4. Established the Nuclear Science and Engineering (**NSE**) Program at WPI interdisciplinary with Mechanical Engineering and Materials Engineering. Approved by faculty and launched in Fall 2012. Founding director (2012- 17).
5. Initiated a focused alumni outreach activity to engage Physics Alumni by informing them of the developments in Physics at WPI and offering a variety of options for them to participate and support the students and faculty.

AY2014/15: Year previous to stepping down as Head of Physics at WPI
Faculty = 11 T/TT and 8 NTT = 19 FTE (5 women)
Staff = 2 Administrative and 2 Technical
Ph.D. Student Support = 11 TA positions, 5 Fellowship, 2 RA and 2 Self-Funded
M.S. Student Support = all Self-Funded
Graduate Students = 20 Ph.D., 7 M.S., and 6 MPED students = 33 total
Graduate Degrees = 1 Ph.D. And 2 M.S.
Physics and Engineering Physics Majors and Minors = 95 total
Undergraduate PH/PHE Degrees = 13 Majors and 10 Minors
Total Credit Hours Delivered = 7821

II.2. Major Achievements as Program Director and Expert in the Division of Materials Research (DMR)

From 2017-20, was an IPA Program Director in the Condensed Matter Physics (CMP) Program in the Division of Materials Research (DMR) under the Directorate of Mathematical and Physical Sciences (MPS) of the National Science Foundation. The CMP program has an annual budget of approximately $28M, processing about 200 proposals per year at the time, and administering over 100 awards (worth about $80M) per year. My role was initially to provide expertise and coverage for the “soft” side of CMP (polymers, liquid crystals, biosystems, etc.)

but expanded to covering all areas of "hard" and soft" CMP, especially in FY2019 when my co-PD in CMP was detailed to another division.

- During this period, the Soft-Condensed Matter Physics area of CMP was reorganized to better serve the various communities represented in this area.
- Established the area of "Active Matter" to coordinate research and proposal evaluation, which has since grown and doubled in activity including CMP, Solid State and Materials Chemistry (SSMC), Polymers (POL), and Biomaterials (BMAT) programs within DMR.
- Worked with the Biomaterials program and partners at the National Institute of Biomedical Imaging and Bioengineering (NIBIB) to explore and develop join program opportunities.

From 2018-19, also served as the lead Program Director in the BMAT program in DMR. The BMAT program focuses on fundamental materials research on materials from and for biology, grew steadly during this time becoming a $17M/year program with over 150 proposals per year.

- Continued the coordination with NIBIB and developed the first "Square-Table" meeting format (this mode of meeting provides structure, the sides, to bring together groups that do not normally interact or work together) to convene Materials Researchers, Synthetic Biologists, funding agencies, and regulatory agencies to explore the frontiers of at this intersection.
- Called for EAGER proposals jointly funded by the BMAT program and DMR to establish connections between NIBIB and DMR researchers. Helped establish an NSF-NIBIB MOU.
- Served on the NSF-AFRL MOU management team representing Synthetic Biology and Materials Research.
- Established connections with the National Cancer Institute (NCI).
- Worked with the Engineering Biology Research Consortium (EBRC) to consolidate and convert the three Square-Table meeting outcomes (meeting reports and published perspective in Nature Materials, https://doi.org/10.1038/s41563-022-01231-3 article) into a roadmap on this area of biotechnology.

From 2020-22, served as a part-time Expert in DMR to continue and expand the interactions developed as a PD with the Square-Table meetings, finalized the *Engineering Biology & Materials Science: A Research Roadmap for Interdisciplinary Innovation* published by the Engineering Biology Research Consortium (EBRC) in 2021 that contained the first three Square-Table meeting outcomes (https://roadmap.ebrc.org/2021-roadmap-materials/), EAGER funding of DMR/NIBIB interdisciplinary research, and developed new collaboration with the National Cancer Institute around treating cancer as a living material that launched another three Square-Table meetings. Assisted where needed in various programs to process proposals.

II.3. Major Achievements as Division Director (DD) of the Division of Materials Research (DMR)

From 2023-26, served as the Division Director for DMR under MPS at NSF. DMR was the largest division at NSF during the time of this IPA role. DMR had an annual budget of about $330M, a leadership team of 4 (the division director, the deputy division director (DDD), staff manager, and financial manager), a support staff of 10, and about 25 program directors (being a mix of permanent federal employees and IPA rotators), plus 1 or 2 part-time experts. The division manages a number of programs ranging from material (5) and disciplinary (3) specific single-investigator programs (under the Topical Materials Research Programs, NSF 23-612 and NSF 23-611), teams level programs (DMREF, NSF 25-508), to centers (MRSEC, NSF 26-500), to large-scale platforms (MIP, NSF 25-521), to very large scale facilities (CHEXS, CHRNS, and NHMFL).

- During FY24, took on all supervisory duties in DMR as the DDD stepped down. Initiated a search and completed the hiring of a new DDD and mentored candidate through the Senior Executive Service (SES) certification.

- As part of the position, co-chaired the inter-agency subcommittee of OSTP on Materials Genome Initiative (MGI) with NIST and AFRL.
- Served on NSF Steering Committees for Semiconductors (co-chair in FY24) and Quantum Initiatives.
- Served on the MPS Living Sciences Working Group as chair.
- Established the DMR News Letter and the monthly DMR Open Hour as new outreach activities.
- Expanded NSF-NCI cooperation and established NSF-NCI MOU, completed the Square-Tables, published a perspective in Nature Reviews Bioenegineering (https://doi.org/10.1038/s44222-023-00105-w), established a Dear Colleague Letter (DCL), NSF 23-039 to connect NCI and NSF researchers (https://www.nsf.gov/funding/opportunities/dcl-mps-nci-supporting-new-areas-knowledge-spark-cancer-living).
- Coordinated with the new TIP directorate to establish a DCL on Use-Inspired Creativity Extension for the Bioeconomy (UICREX-Bioeconomy), NSF 24-133, which later grew into the TTP solicitation.
- Coordinated across NSF to establish a DCL: Special Guidelines for Submitting Collaborative Proposals under U.S. National Science Foundation (NSF) and the Ministry of Electronics and Information Technology (MeitY) of India Collaborative Research Opportunities, NSF 23-139.
- Worked with AFRL to create and establish through both agencies the next version of the NSF-AFRL MOU (2.0), serving as the initial co-chair of the NSF-AFRL Steering Committee.

Planned and implement the DMR restructuring as part of an NSF wide restructuring that removed divisions from its organization chart. The new structure preserved the DMR programs into two sections. The Foundational Materials Research section contains nearly all the material or discipline specific programs such as the TMRP, REU, and STC, while the Advanced Materials Accelerator section contains essentially materials agnostic programs across scales (CMMT, DMREF, MRSEC, MIP, Facilities).

III. AWARDS, RECOGNITION, SERVICE

III.1. Honors and Awards

1. *Morton-Thiokol Research Associate*, Physics, University of Akron (1988- 89).
2. *David B. Smith Fellowship* (honoring the outstanding graduate student in each department), Physics, Kent State University (1991- 92).
3. National Science Foundation CAREER Award DMR-0092786 (2001- 05).
4. *Sigma Xi Young Faculty Research Award*, WPI Chapter, April 2004.
5. *WPI Coleman Fellow*, Coleman Foundation Faculty Entrepreneurship Fellows Program (2010- 11).
6. Elected *Sigma Xi* Northeastern Region Member on *Committee on Nominations*, (2017- 20).

III.2. Professional Memberships

1. Board of Trustees – Spirit of Knowledge Charter School (2010- 11, 2013- 15)
2. American Physical Society (since 1996, Lifetime member)
3. International Liquid Crystal Society (since 1996)
4. American Association of University Professors (since 1999)
5. American Association for the Advancement of Science (since 1998)
6. Materials Research Society (since 2018)
7. Sigma Xi (since 2003, Lifetime member); Secretary, WPI Chapter of Sigma Xi (2003- now).

III.3. Referee / Reviewer / Evaluator

1. Peer-Reviewed Journals: Journal of Chemical Physics, Journal of Physical Chemistry, Journal of Physics and Chemistry of Solids, Journal of Molecular Liquids, Liquid Crystals, Molecular Crystals Liquid Crystals, Molecules, Physical Review (**B**, **E**, and Letters), Physica **E**, Nanomaterials, Symmetry.
2. Reviewer for Funding Agencies / Organization: National Science Foundation, U.S. Civilian Research and Development Foundation, ACS Petroleum Research Fund, W.M. Keck Foundation.
3. External evaluator with Joel D. Brock (Cornell U.) of proposal for a PhD in Physics at RIT, final report supporting proposal submitted 09 August 2021. Physics PhD program at RIT approved by NYSDE 2022.

III.4. WPI Committee and Administrative Service

1. Physics Colloquium Committee (1998- 99).
2. Physics Search Committees (12):
    a) Faculty (1998- 99): hired Nancy Burnham – AFM experimentalist
    b) Machinist/Laboratory Coordinator (1999- 2000): hired Fred Hutson
    c) Faculty (2001- 02): hired Carolann Koleci – Physics Education
    d) Faculty (2002- 03): hired Rafeal Garcia – Soft-matter experimentalist
    e) Faculty (2006- 07): hired Stephan Koehler – Soft-matter experimentalist
    f) Faculty (2007- 08): hired Izabela Stroe – Biophysics experimentalist
    g) Faculty (2008- 09): hired Erkan Tuzel – Biophysics theorist/computationalist
    h) Faculty (2010- 11): hired Qi Wen – Biophysics experimentalist
    i) Faculty (2011- 12): hired David Medich – Medical/Nuclear experimentalist, start-up by NRC grant
    j) Faculty (2013- 14): hired Lyubova Titova – THz optics and spectroscopy experimentalist
    k) Faculty (2021- 22): hired William McCarthy – Nuclear and medical physics experimentalist.
    l) Physics Department Head (2025- 26):
3. Physics Graduate Recruitment Committee (1998- 99). Now part of Physics Dept. Graduate Committee.
4. Physics Department Graduate Committee (PDGC):
    a) Established Committee Charter in Fall 1999.
    b) Elected First Chair for 1999- 01 term: PH graduate students Fall 1999: 7 Ph.D. and 0 M.S.
    * Started "Directed Research Rotations" for incoming graduate students establishing a first-year research experience in order to match students with advisors.
    c) Re-elected Chair for 2001- 03 term: Authored first "*WPI Physics Graduate Student Handbook*".
    d) Re-elected Chair for 2003- 05 term: PH graduate students Fall 2003: 12 Ph.D. and 3 M.S.
5. Head, Department of Physics (April 2006- August 2016).
6. Conducted first-ever external review of the Department of Physics, November 2009.
7. Director of Masters in Physics for Educator Program (August 2012- May 2016), founding.
8. Director of Nuclear Science and Engineering Program (January 2013- July 2017), founding.
9. Physics Department Tenure Committee (PDTC): elected AY22-23.
10. Committee on Advising and Student Life (CASL): (Replacement term, 2003- 04, campus-wide).
11. Chair, Committee on Academic Operations (CAP): elected August 2016- July 2017, campus-wide.
12. Committee on Academic Promotions (COAP): elected August 2019- July 2022, campus-wide; elected chair of COAP for AY21/20; COAP rep on MME Head Search Committee (2022) – hired Robert Hyers; elected August 2023- July 2024, campus-wide.

III.5. Contributions and Promotions

1. Contributions in the media:
    a) Newspeak article on the Research Corporation Grant (1 February 2000)
    b) Interview on local Channel 3 news about the same Grant (21 February 2000)

c) Newspeak article on the NSF-Career award (1 March 2001)
d) TechNews Faculty Corner article, "*The World Year of Physics 2005*". (Vol. 70, Issue 6, 22 February 2005)
e) "*The physics of Santa's Christmas night journey*", by Yvonne Abraham, Boston Globe Columnist, 23 December 2012.
f) Meteor Impact in Russia Interview, NPR & Channel 3, March 2013.
g) Interviewed on latest quantum computing developments, ComputerWorld, October 2014.
h) "*Deflategate*" interviews, WBZ tv and radio, Worcester News Tonight, January 2015.
i) Quoted in "*Soil trucks in Central Mass. routinely exceed limits*" by Susan Spencer, Watchdog Report, Worcester Telegram, 14 November 2016.

4. Running of Department Tours, Open Houses, and Closer Look programs for Physics at WPI since 2000.
5. Founded the "Goddard Cup Competition" in 2008 on the 100th Anniversary of the graduation of Robert H. Goddard from WPI. The 'Cup' has been the prize for an annual water rocket competition of area k-12 teams.
6. Founded WPI's first Physics summer camp, Physicspalooza, for 6-8 graders Summer 2013. Expanded summer programs with Physics Ignite for 7-8 graders (2016). Expanded summer programs with Physics Launch for 8-9 graders (2017) and Physics Spark for 5-6 graders (2017).
7. Developed Physics contribution for 2012 inaugural *TouchTomorrow* event (annual celebration of science and technology in association with NASA). Expanding contribution for 2013 *TouchTomorrow* event to include a '*Virtual Tour of the Universe*', repeated annual until 2021.

III.5. Non-Academic Contributions to Student Welfare

1. WPI Chapter of Sigma Xi: Secretary (2003- 19, 2020- now; campus-wide).
2. Member, Board of Trustees, Spirit of Knowledge Charter School, Worcester, MA (2010- 11, 2013- 15).
3. Faculty Advisor to Alpha Phi Omega (APO), the largest service fraternity at WPI (2013- now).

IV. SCHOLARSHIP

Citation Reports

As of March 2026, peer-reviewed journals (98), conference papers (15), and Book Chapters (6)

Web of Science:	106 works, citations = 3372 (3020 w/o self-cite), h-index = 30, cites/work = 31.81
Google Scholar:	187 works, citations = 4481, h-index = 33, i10-index = 80
ResearchGate:	184 works, citations = 3784, h-index = 32, Research Interest Score = 1876

IV.1. Publications

Number of citations by *Web of Science* are given in braces with key papers in **bold (> 20 citations)**.
Student co-authors denoted by underline (graduate) and double-underline (undergraduate).

IV.1.a. Peer-Reviewed Papers

1. {9} "Concentration dependence of solvent diffusion in a colloidal suspension", E. von Meerwall, D. Mahoney, G. Iannacchione, D. Skowronski, *Journal of Colloid and Interface Science* **139** (2), 437-45 (1990).
2. {13} "The influence of polydispersity and curative / resin ratio on molecular mobility in epoxy networks", G. Iannacchione, E. von Meerwall, *Journal of Polymer Science: Polymer Physics* **B 29** (6), 659-668 (1991).
3. {9} "Orientational effects on confined 5CB", G.S. Iannacchione, G.P. Crawford, J.W. Doane, D. Finotello, *Molecular Crystals and Liquid Crystals* **222**, 205-13 (1992).
4. **{134}** "Characterization of the cylindrical cavities of Anopore and Nuclepore membranes", G.P. Crawford, L.M. Steele, R. Ondris-Crawford, G.S. Iannacchione, C.J. Yeager, J.W. Doane, D. Finotello, *Journal of Chemical Physics* **96** (10), 7788-96 (1992).
5. **{138}** "Calorimetric study of phase transitions in confined liquid crystals", G.S. Iannacchione, D. Finotello, *Physical Review Letters* **69** (14), 2094-7 (1992).
6. {12} "Confinement and orientational study at liquid crystal phase transitions", G.S. Iannacchione, D. Finotello, *Liquid Crystals* **14** (4), 1135-42 (1993).
7. {9} "Interface influenced phase transitions of alkylcyanobiphenyl liquid crystals: A calorimetric study", G.S. Iannacchione, A. Strigazzi, D. Finotello, *Liquid Crystals* **14** (4), 1153-61 (1993).
8. {16} "AC calorimetry technique: applications to liquid helium films and liquid crystals", L.M. Steele, G.S. Iannacchione, D. Finotello, *Review of Mexican Physics* **39** (4), 588-601 (1993).
9. **{206}** "Randomly constrained orientational order in porous glass", G.S. Iannacchione, G.P. Crawford, S. Zumer, J.W. Doane, D. Finotello, *Physical Review Letters* **71** (16), 2595-8 (1993).
10. **{67}** "Surface induced discrete smectic order in the isotropic phase of 12CB in cylindrical pores", G.S. Iannacchione, J.T. Mang, S. Kumar, D. Finotello, *Physical Review Letters* **73** (20), 2708-11 (1994).
11. **{87}** "Specific heat dependence on orientational order at cylindrically confined liquid crystal phase transitions", G.S. Iannacchione, D. Finotello, *Physical Review* **E 50** (6), 4780-95 (1994).
12. {17} "Liquid crystal order in a highly restrictive porous glass", G.S. Iannacchione, S. Qian, G.P. Crawford, S.S. Keast, M.E. Neubert, J.W. Doane, D. Finotello, L.M. Steele, P.E. Sokol, S. Zumer, *Molecular Crystals and Liquid Crystals* **262**, 13-23 (1995).
13. {4} "Smectic order in a porous interconnected substrate", S. Qian, G.S. Iannacchione, D. Finotello, L.M. Steele, P.E. Sokol, *Molecular Crystals and Liquid Crystals* **265**, 395-402 (1995).
14. {7} "AC-calorimetry studies at the Hex*B* – Sm*A* and Cry*B* – Hex*B* phase transitions in two compounds with hydrogen bonding", G. Iannacchione, E. Gorecka, W. Pyzuk, S. Kumar, D. Finotello, *Physical Review* **E 51** (4), 3346-9 (1995).

15. {11} "Numerical study of cylindrically confined nematic liquid crystals", R.M. Marroum, G.S. Iannacchione, D. Finotello, M.A. Lee, *Physical Review* **E 51** (4), R2743-6 (1995).
16. {9} "High-resolution calorimetric studies at phase transitions for alkylcyanobiphenyl liquid crystals confined to submicron size cylindrical cavities", D. Finotello, G.S. Iannacchione, *International Journal of Modern Physics* **B 9** (18-19), 2247-83 (1995).
17. **{65}** "Nematic ordering in highly restrictive Vycor glass", G. Iannacchione, G. Crawford, S. Qian, S. Zumer, J. Doane, D. Finotello, *Physical Review* **E 53** (3), 2402-11 (1996).
18. **{29}** "Critical behavior of the smectic-*A* to nematic transition confined to a random network", S. Qian, G.S. Iannacchione, D. Finotello, *Physical Review* **E 53** (5), R4291-4 (1996).
19. **{73}** "Deuterium NMR and morphology study of polymer disperse liquid crystal Bragg gratings", G.S. Iannacchione, D. Finotello, L.V. Natarajan, R.L. Sutherland, V.P. Tondiglia, T.J. Bunning, W.W. Adams, *Europhysics Letters* **36** (6), 425-30 (1996).
20. {6} "Critical behavior of the smectic-*A* to nematic transition of confined liquid crystal mixtures", S. Qian, G.S. Iannacchione, D. Finotello, *Molecular Crystals and Liquid Crystals* **292**, 175-81 (1997).
21. {2} "The effect of chirality on the phase transitions of chiral/8CB mixtures", G.S. Iannacchione, S. Qian, M. Wittebrood, D. Finotello, *Molecular Crystals and Liquid Crystals* **302**, 989-99 (1997).
22. {18} "Calorimetric study of phase transitions for octylphenylthiol-pentyloxybenzoate in silica aerogel", B. Zhou, G.S. Iannacchione, C.W. Garland, *Liquid Crystals* **22** (3), 335-9 (1997).
23. **{78}** "Random field effects on the nematic – smectic-*A* phase transition due to silica aerosil particles", B. Zhou, G.S. Iannacchione, C.W. Garland, T. Bellini, *Physical Review* **E 55** (3), 2962-8 (1997).
24. **{45}** "Liquid crystalline behavior of octylcyanobiphenyl confined to submicron size randomly connected porous glasses", G.S. Iannacchione, S. Qian, F. Aliev, D. Finotello, *Physical Review* **E 56** (1), 554-61 (1997).
25. **{23}** "Quasicritical heat capacity at a smectic-*A* – hexatic-*B* phase transition", H. Haga, Z. Kutnjak, G. Iannacchione, S. Qian, D. Finotello, C.W. Garland, *Physical Review* **E 56** (2), 1808-18 (1997).
26. {17} "AC calorimetric studies of phase transitions in porous substrates: Superfluid helium and liquid crystals", D. Finotello, S. Qian, G.S. Iannacchione, *Thermochimica Acta* **304/305**, 303-316 (1997).
27. **{38}** "Critical behavior of a smectic-*A* to nematic phase transition embedded in a random network of voids", S. Qian, G.S. Iannacchione, D. Finotello, *Physical Review* **E 57** (4), 4305-15 (1998).
28. {4} "Phase behavior in the reentrant nematic region of chiral frustrated smectics", G.S. Iannacchione, C.W. Garland, J. Mieczkowski, E. Gorecka, *Physical Review* **E 58** (1), 595-601 (1998).
29. **{204}** "Calorimetric and SAXS study of phase transitions in octylcyanobiphenyl-aerosil mixtures", G.S. Iannacchione, C.W. Garland, J.T. Mang, T. Rieker, *Physical Review* **E 58** (5), 5966-81 (1998).
30. {14} "Critical heat capacity at the smectic-*A* – smectic-*C* transition in a partially fluorinated liquid crystal", G. Iannacchione, C.W. Garland, P.M. Johnson, C.C. Huang, *Liquid Crystals* **26** (1),51-55 (1999).
31. {2} "Twist-grain-boundary transitions in a chiral tolane compound", G.S. Iannacchione, C.W. Garland, *Liquid Crystals* **26** (1), 69-74 (1999).

---------- Started at WPI August 1998 ----------

32. **{32}** "Effects of quenched disorder on the orientational order of the octylcyanobiphenyl liquid-crystal", H. Zeng, B. Zalar, G.S. Iannacchione, D. Finotello, *Physical Review* **E 60** (5), 5607-18 (1999).
33. {6} "Nematic structures in randomly interconnected porous hosts", D. Finotello, H. Zeng, B. Zalar, G.S. Iannacchione, *Molecular Crystals and Liquid Crystals* **358**, 237-250 (2001).
34. **{24}** "Elastic coupling of silica gel dynamics in a liquid-crystal – aerosil dispersion", C.C. Retsch, I. McNulty, G.S. Iannacchione, *Physical Review* **E 65** (3), 032701-4 (2002).
35. **{42}** "Hydrogen-bonded silica gels dispersed in a smectic liquid-crystal: A random field XY system", S. Park, R.L. Leheny, R.J. Birgeneau, J-L. Gallani, C.W. Garland, G.S. Iannacchione, *Physical. Review* **E 65** (5), 050703(R) (2002), [cond-mat/0112073].

36. **{69}** "Smectic ordering in liquid-crystal – aerosil dispersions II: Scaling analysis", G.S. Iannacchione, S. Park, C.W. Garland, R.J. Birgeneau, R.L. Leheny, *Physical Review* **E 67** (1), 011709 (2003), [cond-mat/0208287].
37. **{95}** "Smectic ordering in liquid-crystal – aerosil dispersions I: X-ray analysis", R.L. Leheny, S. Park, C.W. Garland, R.J. Birgeneau, G.S. Iannacchione, *Physical Review* **E 67** (1), 011708 (2003), [cond-mat/0208284].
38. **{51}** "Effect of a quenched random field at a continuous symmetry breaking transition: Nematic to smectic-*A* in an 8OCB+aerosil dispersion", P.S. Clegg, C. Stock, R.J. Birgeneau, C.W. Garland, A. Roshi, G.S. Iannacchione, *Physical Review* **E 67** (2), 021703 (2003).
39. **{33}** "High-resolution x-ray study of the nematic – smectic-*A* and the smectic-*A* – smectic-*C* transitions in 8S5-aerosil gels", P.S. Clegg, S. Park, R.J. Birgeneau, C.W. Garland, G.S. Iannacchione, R.L. Leheny, M.E. Neubert, *Physical Review* **E 68** (3), 031706 (2003), [cond-mat/0305378].
40. **{53}** "Evolution of the nematic to isotropic phase transition in 8OCB+aerosil dispersions", A. Roshi, G.S. Iannacchione, P.S. Clegg, R.J. Birgeneau, *Physical Review* **E 69** (3), 031703 (2004), [cond-mat/0310070].
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100. {-} "Extraction of viscoelastic properties from topological defect dynamics in chromonic liquid crystals", Xuxia Yao, Alireza Shams, A.D. Rey, Jung Ok Park, G.S. Iannacchione, M. Srinivasarao, – in preparation (2022).
101. {-} "High-resolution experimental study and numerical modeling of population dynamics in a bacteria culture", A. Chatterjee, A. Charest, S. Alagarni, G.S. Iannacchione, *Physical Review* **E** – in preparation (2022).
102. {-} "Local equilibrium hypothesis as the principle of equivalence in thermodynamics", A. Chatterjee, G.S. Iannacchione, *Entropy* – in preparation (2022).
103. {-} "Study of nematic fluctuations dynamics utilizing high-speed imaging and a digital dynamic light microscopy technique", Beom-Jin Yoon1, Min Sang Park, Jung Ok Park, G.S. Iannacchione, M. Srinivasarao , – in preparation (2022).

IV.1.b. Book Contributions

1. "High-Resolution Calorimetric Studies at Phase Transitions for Alkylcyanobiphenyl Liquid Crystals Confined to Sub-micron Size Cylindrical Cavities", D. Finotello, G.S. Iannacchione, in Liquid Crystals in the Nineties and Beyond, Chap. 4, p. 109-145, edited by S. Kumar (World Scientific, 1995).
2. "Phase Transitions in Restricted Geometries", D. Finotello, G.S. Iannacchione, and S. Qian, in Liquid Crystals in Complex Geometries Formed by Polymer and Porous Networks, Chap. 16, p. 325-343, edited by G.P. Crawford, S. Zumer (Taylor & Francis, London, 1996). ISBN: 0-7484-0464-3.
3. "Critical Behavior of a Smectic-*A* to Nematic Transition of Confined Liquid Crystal Mixtures", S. Qian, G.S. Iannacchione, D. Finotello, Dynamics and Defects in Liquid Crystals: A Festschrift in Honor of Alfred Saupe, Chap. 3, p. 203-209, edited by P. Palffy-Muhoray and P. Cladis (Gordon and Breach Science Publishers, London, 1998). ISBN: 90-5699-649-5.
4. "Studies of Nanocomposites of Carbon Nanotubes and a Negative Dielectric Anisotropy Liquid Crystal", P. Kalakonda, G.S. Iannacchione, Carbon Nanotubes: Recent Progress, Chap. 10, p. 188-206, edited by Abdullah Mohammed Asiri, Mohammed Rahman (IntechOpen, 2018).
5. "Image-Based Analysis of Patterns Formed in Drying Drops", A. Pal, A. Gope, G.S. Iannacchione, in Pattern Recognition and Machine Learning, p. 567-574 (8th International Conference, PReMI 2019, LNCS

11941, Tezpur, India, December 17–20, 2019 Proceedings, Part I) edited by B. Deka at al. (Springer Nature Switzerland AG, 2019); https://doi.org/10.1007/978-3-030-34869-4_62.

6. "Statistical Image Analysis of Drying Bovine Serum Albumin Droplets in Phosphate Buffered Saline", A. Pal, A. Gope, G.S. Iannacchione in Biomedical Data Mining for Information Retrieval - Methodologies, Techniques and Applications, Artificial Intelligence and Soft Computing for Industrial Transformation series, Chp. 8, p. 213-235 (Scrivener – Wiley Publishing, 2021); ISBN 978-1-119-71124-7.

IV.2. Grants and Patents

Total grants awarded 15 for $3,208,776

1. **Research Corporation**, Research Innovation grant: RI0388: "New approach for practical calorimetric spectroscopy". Period: 1 May 2000 to 1 May 2002. Budget: $35,000 (equipment). Role: PI
2. **National Science Foundation**, Division of International Programs NSF-CNRS: 0910016: "Magnetic properties of mono-molecular Langmuir-Blodgett films of organic radicals". Period: 1 March 2000 – 1 March 2002. Budget: $7,000 (travel). Role: PI
3. **National Science Foundation**, Division of Materials Research: DMR-0092786: "CAREER – Random disorder in phase transitions of complex fluids". Period: 15 March 2001 – 14 March 2006. Budget: $499,683 (salary/student). Role: PI.
4. **National Institute of Science and Technology**, Summer Undergraduate Research Fellowship for Adam Darvish, 2008. Budget: $7,615. Role: PI.
5. **National Institute of Science and Technology**, Summer Undergraduate Research Fellowship for Long Tong, 2009. Budget: $7,715. Role: PI.
6. **National Institute of Science and Technology**, Summer Undergraduate Research Fellowship for Christopher Horgan, 2010. Budget: $8,315. Role: PI.
7. **National Science Foundation**, Division of Materials Research: DMR-0821292: "MRI: Acquisition of a Modulated Differential Scanning Calorimeter and Spectroscopic Ellipsometer for Characterizing Complex Fluids". Period: 1 July 2008 – 31 June 2011. Budget: $233,194 (equipment). Role: PI.
8. **Dow Chemical Corporation Equipment Donation**: July 2013, total value: $225,000. Role: Lead.
9. **U.S. Nuclear Regulatory Commission**: WPI Nuclear Science and Engineering Curriculum Development. Period: Aug. 2014 – Sept. 2016. Budget: $190,000. Role: co-PI (PI = Izabela Stroe).
10. **U.S. Nuclear Regulatory Commission**: WPI NSE UG Scholarship. Period: Aug. 2014 – Sept. 2016. Budget: $196,022 (student support). Role: co-PI (PI = David Medich).
11. **U.S. Nuclear Regulatory Commission**: WPI NSE Graduate Fellowship. Period: Aug. 2014 – Sept. 2016. Budget: $400,000 (student support). Role: co-PI (PI = David Medich).
12. **U.S. Nuclear Regulatory Commission**: WPI NSE Faculty Development. Period: Aug. 2014 – Sept. 2017. Budget: $367,022 (equipment & personnel support). Role: PI.
13. **National Science Foundation**: DMR-1748184 "IPA with National Science Foundation". Role: PI. Period: 7 August 2017 – 1 August 2018, Budget: $172,681; Renewal period: 7 August 2018 – 6 August 2019, Budget: $202,738; Renewal period: 7 August 2019 – 6 August 2020, Budget: $206,792; Award total = $582,211.
14. **U.S. Nuclear Regulatory Commission**: WPI NSE Faculty Development. Period: Apr. 2021 – Mar. 2024. Budget: $449,999 (equipment & personnel support). Role: co-PI (PI = David Medich).
15. **National Science Foundation**: DMR-2316008 "IPA with National Science Foundation". Role: PI. Period: 30 January 2023 – 29 January 2024, Budget: $213,424; Renewal period: 30 January 2024 – 29 January 2026, Budget: $431,931. Award total = $645,354.

Patents

1. "A Novel Manufacturing Method Of Polymer-Matrix Composite Materials For Use In 3D Printing And

Other Applications", Matthew Ryder, Diana Lados, Germano Iannacchione, Amy Peterson, Provisional Patent, EFS ID 30264940, App. # 62554181, US 2017.

IV.3. Consulting

Consultant, Planar Systems / Standish Inc., Madison WI. 1999- 2000. Provided expert advise in polymer composites and LCD technologies. Performed characterization measurements on propriety compounds used for LCD applications.

IV.4. Presentations

IV.4.a. Seminars, Colloquiums, Proceedings (**bold** = contributed paper)

1. "Influence of polydispersity and curative-epoxy ratio on molecular mobility in epoxy networks", G. Iannacchione and E. von Meerwall, *Morton-Thiokol/University IR&D Review*, (Invited, August 15, 1989).
2. "Diffusion in colloidal suspensions: Application of mixture theories", G. Iannacchione, Dept. of Physics, *University of Akron*, (Invited, 25 October 1990).
3. "AC heat capacity measurements on 5CB and 8CB liquid crystals confined in submicron size cavities", G. Iannacchione, Research Symposium, *Kent State University*, (Invited, 18 March 1991).
4. "Show and tell: AC calorimetric studies of liquid crystals", G. Iannacchione, Dept. of Physics, *Kent State University*, (Invited, 2 April 1991).
5. "Confinement and orientational study at liquid crystal phase transitions", G. S. Iannacchione and D. Finotello, *14th International Liquid Crystal Conference*, Pisa, Italy (Invited, 25 June 1992).
6. "A study of liquid crystal phase transitions in porous geometries", G. Iannacchione, Dept. of Physics, *Kent State University*, (Invited, 9 September 1993).
7. "Confined liquid crystal phase transitions: a calorimetric study", G. Iannacchione, Dept. of Physics, *Rutgers University*, (Invited, 15 April 1995).
8. "Deuterium NMR spectroscopy of confined liquid crystals", G. Iannacchione, Materials Research Directorate, *Wright Patterson AFB*, (Invited, 30 August 1995).
9. "The effect of chirality on the phase transitions of chiral/8CB mixtures", G. Iannacchione, S. Qian, M. Wittebrood, and D. Finotello, *16th International Liquid Crystal Conference*, Kent, OH (Invited, 25 June 1996).
10. "The effect of random-disorder on liquid crystal phase transitions", G. Iannacchione, Dept. of Physics, Chez Pierre Seminar, *Massachusetts Institute of Technology*, (Invited, 17 October 1997).
11. "The effect of random-disorder on liquid crystal phase transitions", G. Iannacchione, Center for Biomolecular Science and Engineering, *Naval Research Laboratory*, (Invited, 12 December 1997).
12. "The effect of random-disorder on liquid crystal phase transitions", G. Iannacchione, Dept. of Physics, *University of Nevada at Las Vegas*, (Invited, 12 February 1998).
13. "The effect of random-disorder on liquid crystal phase transitions", G. Iannacchione, Dept. of Physics, *Worcester Polytechnic Institute*, (Invited, 26 February 1998).
14. "The effect of random-disorder on liquid crystal phase transitions", G. Iannacchione, Dept. of Physics, *Wayne State University*, (Invited, 3 March 1998).
15. "The effect of random-disorder due to aerosil dispersions on liquid crystal phase transitions", G. Iannacchione, *American Physical Society*, (Invited, 18 March 1998); Bulletin of the American Physical Society **43**(1), 510 (1998).

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16. "Liquid crystals all around us", G. S. Iannacchione, Minority Introduction to Engineering, Entrepreneurship and Science Program, *Massachusetts Institute of Technology.* (Lecture, 17 July 1998).

17. "Calorimetric studies of order-disorder phase transitions", G.S. Iannacchione, Dept. of Physics, *Worcester Polytechnic Institute* (Colloquium, 2 November 1998).
18. "Disorder by random order: random perturbation studies on liquid crystals", G.S. Iannacchione, Dept. of Physics, *SUNY at Albany* (Seminar, 19 November 1999).
19. "Review of order-disorder phase transitions in liquid crystals", G.S. Iannacchione, Dept. of Mathematics, *Worcester Polytechnic Institute* (Seminar, 29 March 2000).
20. "Disorder by random order: liquid crystals + aerosil dispersions", G.S. Iannacchione, Dept. of Physics, *Case Western Reserve University* (Colloquium, 13 April 2000).
21. "Liquid crystals imbedded with silica: a model system for random perturbations", G.S. Iannacchione, Dept. of Physics, *Clark University* (Colloquium, 20 April 2000).
22. "Quenched random disorder and finite-size effects on liquid crystalline phase transitions", G.S. Iannacchione, *VII – International Conference on Advanced Materials* (ICAM 2001), Cancun, Mexico (Invited, 26 August 2001).
23. "Review of liquid crystal phase transitions with quenched random disorder", G.S. Iannacchione, *15th Symposium on Thermophysical Properties* (NIST), Boulder, CO (Invited, 22-27 June 2003).
24. "Review of liquid crystal phase transitions with quenched random disorder", G. Iannacchione, Dept. of Physics, *Worcester Polytechnic Institute* (Colloquium, 24 November 2003).
25. "Dynamics of a nano-colloidal aerosil gel", G.S. Iannacchione, Dept. of Physics and Astronomy, *John Hopkins University* (Seminar, 14 April 2004).
26. "Recent Advances in Calorimetry for Complex Fluids and Biology", G.S. Iannacchione, Sigma Xi Lecture Series, WPI Chapter (Lecture, 1 February 2005).
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97. "**Thermal and electrical transport properties of sheared and un-sheared thin-film polymer/CNTs nanocomposites**", P. Kalakonda, A. Casey, H. Lee, J. Thomson, G. Iannacchione, P. Cebbe, G. Georgiev, Materials Research Society Fall Meeting, TT3.21 – poster, Boston, MA, Dec. 1 - 6, 2013.

98. "Cellular automata simulations of thermal and electrical transport properties of thin-film polymer/CNTs nanocomposites", A. Casey, G.S. Iannacchione, G. Georgiev, P. Cebe, Abstract ID: BAPS.2014.MAR.P1.246.
99. "Formation of vesicles in lipid - liquid crystal colloidal mixtures", J. Peters, G.S. Iannacchione, Abstract ID: BAPS.2014.MAR.G15.13.
100. "Observations of Bacterial Behavior during Infection Using the ARGOS Method", A.J. Charest, S. Algarni, G.S. Iannacchione, Abstract ID: BAPS.2015.MAR.Q47.4.
101. "Population Dynamics of the Stationary Phase Utilizing the ARGOS Method", S. Algarni, A.J. Charest, G.S. Iannacchione, Abstract ID: BAPS.2015.MAR.Q47.9.
102. "Self-organization in non-equilibrium systems", G. Georgiev, G.S. Iannacchione, Abstract ID: BAPS.2015.MAR.L44.13.
103. "Flow Effect on Alignment of MWCNTs in Polymer Nanocomposites", M. Alghamdi, G. Georgiev, G. Iannacchione, Abstract: BAPS.2015.MAR.W41.10.
104. "Least-Action and Entropy Considerations of Self-Organization in Benard Cells", G. Georgiev, G. Iannacchione, Abstract: BAPS.2016.MAR.A40.14.
105. "A Model for Entropy Production, Entropy Decrease, and Action Minimization in Self-Organization", G. Georgiev, A. Chatterjee, Thanh Vu, G. Iannacchione, Abstract ID: BAPS.2017.MAR.M01.214.
106. "Variational Approaches to Quantify Self-Organization in Complex Systems", A. Chatterjee, G. Georgiev, G. Iannacchione, Abstract: BAPS.2017.MAR.X52.10.
107. "An Approach to HydroBone and Other Variable Stiffness Structures", M. Bowers, C. Haramalkar, S. Sridar, C. Majeika, C. Kaan, G.S. Iannacchione, M. Popovic, The 20th International Conference on Composite Structures (ICCS20), Paris, France, 4-7 September 2017.
108. "Agent Based Modeling of Action Efficiency Increase and Entropy Reduction in Self-Organization", G. Georgiev, A. Chatterjee, Thanh Vu, G.S. Iannacchione, Conference on Complex Systems (CCS17), Cancun, Mexico, 17-22 September 2017.
109. "Benard Cells as a Model for Entropy Production, Entropy Decrease, and Action Minimization in Self-Organization", G. Georgiev, G.S. Iannacchione, A. Chatterjee, Thanh Vu, Conference on Complex Systems (CCS17), Cancun, Mexico, 17-22 September 2017.
110. "A Detailed Thermodynamic Study of Rayleigh-Benard Cells", Y. Yadati, S. McGrath, A. Chatterjee, G. Georgiev, G. Iannacchione, Abstract: BAPS.2018.MAR.K47.001.
111. "Non-equilibrium Thermodynamics from First Principles", A. Chatterjee, G. Iannacchione, Abstract: BAPS.2018.MAR.Y47.001.
112. "Morphological Investigation of Lysozyme-Liquid Crystal dried Droplet Pattern formation", A. Pal, G. Iannacchione, Abstract: BAPS.2018.MAR.Y57.004.
113. "Self-Assembly of Nematic Liquid Crystals in Drops of Dried Lysozyme", A. Pal, G.S. Iannacchione, Materials Research Society Fall Meeting 2018, BM09.08.022 – poster.
114. "Self-assembly of Nematic Liquid Crystals in Drying Drops of Lysozyme Protein Solutions", A. Pal, G.S. Iannacchione, Abstract: BAPS.2019.MAR.B58.002.
115. "A Different Kind of Lyotropic Liquid Crystalline Phase: The Case of Orange-II and gamma-Cyclodextrin", G.S. Iannacchione, J. Ok Park, M. Srinivasarao, Abstract: BAPS.2019.MAR.F50.007.
116. "Equation of State for a Far-from-equilibrium Thermodynamic System with Emergent Scales at Steady-state", A. Chatterjee, G.S. Iannacchione, BAPS.2020.MAR.B24.00006.
117. "A Comparative Study of the Pattern Formation in the Drying Protein Droplets suspended in the De-ionized water", A. Pal, G.S. Iannacchione, BAPS.2020.MAR.P15.00003.
118. "**Temperature-Dependent Pattern Formation in Drying Aqueous Drops of Lysozyme**", Anusuya Pal, Amalesh Gope, Germano Iannacchione, Materials Research Society Fall Meeting 2019, SB11.08.04 – poster; CTMSE 2021(International Conference on Current Trends in Materials Science and Engineering, 2021). paper under review.
119. "Phase Separation of 5CB Liquid Crystal Droplets in the Self-assembling Protein Drops via Evaporative Drying", A. Pal, G.S. Iannacchione, Abstract: BAPS.2021.MAR.J24.007.

120. "**Exploring the Pattern Formation of Lysozyme Drying Droplets in Phosphate Buffer Saline Solution**", A. Pal, A. Gope, G.S. Iannacchione, International Conference in Advanced Physics (IEMPHYS-21), 19 (2021).
121. "Maximum Entropy Production Principle and Evidence of Local Equilibrium in Thermal Convection", A. Chatterjee, Takahiko Ban, G.S. Iannacchione, Joint European Thermodynamics Conference (JETC), Prague, Czech Republic (22 June 2021)

V. TEACHING

V.1. Teaching Experience

Taught all first-year physics courses (mechanics, e&m, waves, and modern physics) as lecturer, conference instructor, and as laboratory manager from the small (~30) to large (150+) student introductory (general physics) to advanced (principle of physics) level offerings. Taught mechanics, electrodynamics, thermodynamics, statistical physics/mechanics, and laboratory courses over the entire range from intermediate undergraduate (sophomore) to graduate levels.

Maintained a 22 year average student evaluation rating of 4.32/5.00 for instructor and 4.11/5.00 for the courses I have taught with an average 10-14 hrs/wk student reported hours applied to each of my courses.

V.2. Teaching Innovations

1. Instituted Quiz Competitions into the lectures for PH 2301 – *Electromagnetic Fields*. Twice before each exam, students must prepare a single, exam-level, problem complete with a separate solution. The problem is then exchanged with a fellow student and given 15 minutes to complete. The student is graded $^1/_2$ on the question generated and $^1/_2$ on answering and critiquing the exchanged problem. This allows an evaluation of what the students are expecting on the exam, promotes discussion among the students, and introduces "game theory" to encourage careful construction of the problem (i.e., if the problem is too easy then fellow students benefit).
2. PH 2101 – *Principles of Thermodynamics*
   A 3 credit sophomore-level experimental course on the foundations of thermodynamics for scientist and engineers to develop knowledge of a general description of large number systems, states, canonical state variables, state functions, response functions, and equations of the state. Through both traditional and project-based approaches, students will develop qualitative and quantitative skills for determining the physical meanings of free-energies, enthalpy, chemical potential, entropy, equilibrium states, reversible versus irreversible processes, phases and phase transformation, as well as the "arrow of time". Team-based projects allow students to integrate concepts learned to their specific disciplines. Recommended background: introductory mechanics and multi-variable calculus
   ***** First experimental offering, PH 210x, C-term 2012, second exp. offering C-term 2013, final exp. Offering C-term 2014, adopted by faculty as PH 2101 on 17 January 2014.
3. Developed *Problem Set Portfolio* system for evaluating learning of educators taking MPED content courses. Since one of the learning outcomes for the educators is the ability to generate their own problem set and solutions for a given area of physics, the new system focuses on this ability by generating a portfolio of problems and solutions (half assigned by the instructor and half generated by the student). Educators can then take this portfolio back with them into their classrooms.

V.3. New Curriculum and Programs

V.3.a. <u>Masters of Science in Physics for Educators (MPED)</u>

Established MPED program and helped establish the umbrella *STEM Education Center* at WPI. Approved by faculty and launched in Fall 2012. The MPED program is intended for educators seeking an advanced degree in Physics and obtain Professional Teaching License in MA. Founding director and lecturer (2012- 2016).

Created an entirely new and unique *physics content curriculum* for educators, a *Problem Set Portfolio* grading system, innovative Education Theory component, and culminating in a Graduate Qualifying Project (GQP). Developed a set of 4 Depth Courses 2 credits each (MPE 510 Classical Mechanics, MPE 520 Electrodynamics,

MPE 530 Modern Physics, MPE 540 Differential Equations in Nature), 2 Methods Courses at2 credits each (MPE 550 Computational Methods in Physics, MPE 560 Experimental Methods in Physics), and 3 Breadth Courses at 3 credits each (MPE 572 Physics Research Experience for Teachers, MPE 574 Physics for Citizens and Leaders, MPE 576 Physics in Popular Culture).

As the director of the MPED Program (2012- 16), I had oversight of scheduling and teaching assignments, development of curriculum, and recruiting. Program began in Fall 2013 with 5 admitted M.S. Educators and grew to 10 in Summer of 2013. All MPE courses were developed and offered annually beginning AY13/14.

V.3.b. Nuclear Science and Engineering Program

Established a revitalized NSE Program at WPI interdisciplinary with Mechanical Engineering and Materials Engineering. Approved by faculty and launched in Fall 2012. Founding director (2012- 17).

Created a new NSE Graduate Certificate Curriculum encompassing science (medical and materials), environmental sustainability, and engineering (materials and energy) areas in a blended (in-class with on-line) teaching method. Created six (6) new courses each 3 credits (18 credits total) with 12 credits needed for the graduate certificate.

As the director of the NSE Program (2013- 17), I have oversight of course scheduling, teaching assignments, and curriculum development. Significant Corporate Professional Education participation has emerged with over 50 students evenly between the in-class and on-line registrations. All NSE courses were developed and routinely offered beginning in AY13/14. Proposals submitted for an undergraduate NSE minor, a graduate NSE M.Sc., and a Medical Health Physics Ph.D. degree offerings on track for launch in AY17/18.

V.3.c. STEM Faculty Launch Workshop

Part of founding organizing team and directed the STEM Faculty Launch is a premier workshop for graduate students and post-doctoral researchers seeking tenure-track positions in the STEM fields. This two-day workshop covers best practices for pursuing, applying for, and establishing faculty careers. This annual workshop is open to candidates nationwide with women and traditionally underrepresented minority candidates especially encouraged to participate. These workshops have received very high evaluations by the participants.

Inaugural workshop = 24-25 September 2015 (80 applications, 27 participants, 21 women)
2nd Annual Workshop = 21-23 September 2016 (174 applications, 34 participants, 24 women)

V.3.d. Goddard Water Rocket Competition & Physics Summer Programs

Founded the “Goddard Cup Competition” in 2008 on the 100th Anniversary of the graduation of Robert H. Goddard from WPI. The 'Cup' has been the prize for an annual water rocket competition of area k-12 teams since 2008. The Competition repeated annually 2008 – now.

Developed Physics Demonstrations contribution for 2012 inaugural TouchTomorrow event (annual celebration of science and technology in association with NASA). Expanding contribution for 2013 TouchTomorrow event to include a 'Virtual Tour of the Universe', both demonstrations and tour repeated annual since, 2012 – now.

Founded WPI's first Physics summer camp, Physicspalooza, for 6-8 graders Summer 2013. This day camp over 5 days exposes children to various physics activities based on physics lecture demonstrations that they can do and includes a journal to record their discoveries. Expanded summer programs with Physics Ignite for 7-8 graders

(2016). Expanded summer programs with Physics Launch for 8-9 graders (2017) and Physics Spark for 5-6 graders (2017). Annually from 2013- now.

V.4. Projects Advised

V.4.a. Major Qualifying Projects (MQP): 71 projects, 122 students, 19 awards (noted in **bold)**

1. *Eric Clinton*, "The Design, Fabrication, and Testing of an Ultra-stable Thermal Platform for Temperature Sensor and Experimental Cell Housing", PH GSI-9801 (May 1999) **– *Lawton-Plimpton Award***.
2. *Jeremy Gogos*, "Numerical Simulation of the Confined Nematic to Isotropic Phase Transition", PH GSI-9802 (May 1999) **– *Provost MQP and Robert H. Goddard Award.***
3. *Karen Hirst*, "A Frustrated Liquid crystal", PH GSI-9901 (May 2000) **– *Lawton-Plimpton Award***.
4. *Kevin King*, "Thermal Response Optimization Study of AC-Calorimetric Cells", PH GSI-9903 (May 2000) **– *Provost MQP Award***.
5. *Anthony Cruz*, "Fractal Formation in Confined Geometries", PH GSI-0001 (May 2001).
6. *Sarah House*, *Lewis Kotredes*, "GSFC NASA-WPI: Design and Testing of an Advanced Adiabatic Demagnetization Refrigerator", co-advised with S. N. Jasperson and F. J. Looft, PH SNJ-G201 (October 2001) **– *L. Kotredes received the Salsibury Award.***
7. *Joseph P. Lefrancois*, "Construction of a Versatile Low-Temperature AC-Calorimeter", PH GSI-0102 (May 2002) **– *Lawton-Plimpton Award.***
8. *Brian Dewhirst*, "Dielectric Measurements of a Liquid Crystal-Aerosil Dispersion", PH GSI-0103 (May 2002).
9. *Matthew Hilt*, "Construction of a Thermoacoustic Refrigerator", PH GSI-0106 (May 2002) **– *Lawton-Plimpton Award.***
10. *Brittany R. Morgan*, "Simulation of Micro-Elasticity in a Fractal Network", PH GSI-0101 (May 2002).
11. *Nikole Howard*, "Numerical Simulations of the Impact of Jupiter's Migration on the Formation of the Hilda Asteroid Group", PH GSI-0107 (May 2002) **– *Robert H. Goddard Award.***
12. *Elizabeth Bouvier*, "Operation of a Low-Temperature Versatile AC-Calorimeter", PH GSI-0304 (May 2004).
13. *Helen Hanson*, *Deanna Wolfson*, "Geiger-Mode Avalanche Photo-diode for LADAR", MIT/Lincoln Labs, PH GSI-0504 (December 2005) **– *WPI/Sigma Xi MQP Award & Honorable Mention Provost MQP Award***
14. *Anne Bothmer*, *Kevin Glynn*, "Photomechanical Properties of a Liquid Crystal", co-advisor with N. Burnham, PH NAB-MQP5 (March 2006) **– *Honorable Mention Provost MQP Award, A. Bothmer won the Salisbury Award***,
15. *William Aust*, "Firefighter Location Detection System", co-advisor with D. Cyganski, PH DC-0501 (May 2006).
16. *Jared Bollinger*, "Digital Dynamic Light Scattering Experiment for Colloids", PH GSI-0501(May 2006).
17. *Christopher Kalisz*, "Disorder Strength Measurement of a Liquid Crystal – Silica Colloid", PH GSI-0502 (May 2006).
18. *Brenden Brown*, "Theoretical Modeling of AC/RF Calorimetry", PH GSI-0503 (May 2007).
19. *Caroline F. Mallory*, "Accelerator Beam Window: Radiation Cooled Window for an ADS Reactor", PH GSI-0605 (May 2007).
20. *Jesse Sawyer* and *Eugeny Sosnovsky*, "Omni-directional Horizontally Polarized UHF Antenna Design", MIT Lincoln Labs, PH GSI-0701 (December 2007) **– *E. Sosnovsky won the Salsibury Award***.
21. *Eric Scheid* (PH), *Christopher Cleary* (ECE), and *Sara Duran* (ECE), "Discriminating Between Splitting and Crossing Targets: A Radar Tracking Problem", MIT Lincoln Labs, co-advised with K. Clements, PH KAC-0702 (December 2007).
22. *Angelo Chandler* (PH), *Thomas MacDonald* (ECE), "Profit and Loss Work flow Analysis", Bank of America – London UK, co-advised with M. J. Ciaraldi, A. Gerstenfeld, and J. Orr, PH MXC-W075 (December 2007).

23. *John Schneeloch*, "Structural Analysis of a Simulated Super-cooled Liquid", co-advised with G. D. J. Phillies, PH GDP-0701 (May 2008).
24. *Olga Petrova*, "Search for Coincidence Events in LIGO and GEO600 Data" at MIT, PH GSI-0702 (May 2008) **– *Robert H. Goddard Award.***
25. *Christopher Calommusi*, "AC Calorimetry Spectroscopy", PH GSI-0303 (May 2008).
26. *Jillian Daniels*, "Gravity Anomalies and Flexure", PH GSI-0705 (May 2008).
27. *Andrew Lingenfelter*, *Meghan LeBounty*,"Optimization of a Thermoacoustic Refrigerator", PH GSI-0706 (May 2008).
28. *Michael Kavulich*, "The Physics of Sand Dune Formation and Migration on Mars", co-advised with D. De Paor, PH GSI-0801 (May 2008).
29. *Steven Rose* (PH), *Bradley Scoville* (ECE), "Aircraft Lasercom Terminal Compact Optical Module (ALT-COM)", MIT Lincoln Labs, co-advised with W. Michalson (ECE) PH GSI-0806 (October 2008).
30. *Joseph Mullin*, *Matthew Silva Sa*, *Dericc Orso*, "Rutherford Scattering and GeLi Detection", co-advised with S. Weekes (MA) PH GSI-0805 (December 2008).
31. *Amanda Cox*, *Jessica LaGoy*, *Thomas MacDonald*, "Catapults, Corked Bats, and Tesla Coils: Finding the Truth", PH GSI-0802 (May 2009).
32. *Vineet Barot*, *David Coit*, "Experiments with a Thermoacoustic Refrigerator", PH GSI-0807 (May 2009).
33. *Nicholas LeCompte*, *Dante Amaroso*, "Thin-Film Ferrofluidics", joint MQP co-advised with B. Verneascu (MA) PH GSI-0808 (May 2009) **– *N. LeCompte won the Salisbury Award, D. Amoroso won the R. H. Goddard Award***.
34. *Ronald Turba*, "Production of a Fluid Microjet Using Electrospray and Flow Focusing", co-advised with J. Blandino (AE), JB3-MFJ1 / PH GSI-0809 (May 2009).
35. *Caleb Teske*, *Robert Lowery*, "An Experimental Study of a Table-Top Doppler Effect Simulation", PH GSI-0812 (May 2009).
36. *Charles Fancher*, *Glenn Amundsen*, *Long Tong*, *Genevieve Bowman*, "Linking Radar Data to Physical Models", MIT Lincoln Laboratory, PH GSI-0904 (October 2009).
37. *Steve Ellis*, "The Nematic-Isotropic Phase Transition in Liquid Crystal and Carbon Buckyball Colloids", PH GSI-0901 (May 2010).
38. *Christopher Horgan* (PH), *Justin Fraize* (ECE), *Matthew Sirocki* (ECE), "High-Powered Microwave Systems for Boost Phase Interception", MIT Lincoln Laboratory, co-advised with E. Clancy (ECE) PH GSI-0905 (October 2010).
39. *Matthew Rumore*, "Experimental Study of GEMs", at Brookhaven National Laboratory, PH GSI-0803 (February 2011).
40. *Caitlyn Shaddock*, "Ellipsometry of Biofilms", PH GSI-1006 (May 2011).
41. *Robert Connick*, "Musical Tesla Coil", PH GSI-1009 (May 2011).
42. *Samantha O'Connor* (PH), *Christopher Massa* (ECE), and *Erik Silva* (ECE), "The Beacon Locator Project: A Passive Direction Finding System for Locating Pulsed Emitter Signals", MIT Lincoln Laboratory, co-advised with E. Clancy (ECE), PH GSI-1104 (October 2011).
43. *Craig Janeczek* (PH/ECE), "Pedestrian Car Alert System", co-advised with S. Bitar (ECE), PH SJB-1A11 (May 2012).
44. *Autumn Paro*, "Introduction to Plasma Physics", co-advised with A. Zozulya (PH), PH AZ-AZ01 (May 2012).
45. *Shane Jackson* (PH), *Daniel Guerin* (ECE), *Jon Kelly* (ECE), "Passive Direction Finding a Phase Interferometry Direction Finding System for an Airborne Platform", MIT Lincoln Laboratory, co-advised with E. Clancy (ECE), PH GSI-1202/EXC-1202 (October 2012).
46. *Jeffrey Peters*, Cellular Uptake of Functionalized Gold Nanoparticles", PH GSI-1206 (May 2013).
47. *Xiaojing (Cathy) Wang* (PH/MA), "Three Phase Boundary Models", double-major MQP co-advised with J. Fehribach (MA), PH/MA JDF-1211 (May 2013) **– *Provost MQP Award***.
48. *Bo Rim Seo* (ME), "Bio-Inspired Robotic Flapping Wing", co-advised with M. Popovic (PH/RBE), RBE MBP-AAAG (May 2013).

49. *Roberto Alvarado* (PH), *Michael Bartlett* (ME), *Richard Beski* (ME), *Santiago Isaza* (ME), "Thermomechanical Reliability", co-advised with R. Pryputniewicz (ME), PH RJP-1211 (May 2013).
50. *Shaun Marshall*, "Liquid Crystals and Protein Mixtures", co-advised with I. Stroe (PH), PH IZS-SH12 (May 2013).
51. *Bryan Bergeron*, "Statistical Mechanics", PH GSI-1204 (June 2013).
52. *Jack O'Brien*, "Physics Education Research", PH GSI-1301 (May 2014).
53. *Eric Reich*, "Statistical Mechanics and Graph Theory", co-advised with MA, BZS-1305 (May 2014).
54. *Jeffrey Havill* (ME) and *Steve Thuo* (PHE), "Transport Properties in Materials", co-advised with D. Lados (ME), PH GSI-1302 (expected Summer 2014).
55. *Kevin Brown* (PH), "Transport Properties in Materials", PH GSI-1302 (December 2014).
56. *Stephanie Herpich*, "Self-Assembly of Quantum Dots", PH GSI-1304 (expected Spring 2015).
57. *Daniel Banco* (PH/ECE), *Benjamin Rude* (PH), and *Matthew Zawatsky* (PH), "Infrared Video Tracker", MIT Lincoln Laboratory, co-advised with E. Clancy (ECE), PH GSI-1402 (October 2014).
58. *Lydia George* (ME), *Charles Plummer* (ME), *Daniela Ruiz* (ME w/ MAT), *Xiaoyu Wang* (ME), "Thermal/Electrical Transport", co-advised with D. Lados (ME), PH GSI-1401 (May 2015).
59. *Jennifer Albores* (RBE), *Stephen Couitt* (PH/ME), *Stephen Montanez-Sanchez* (RBE/ME), and *Timothy Neilan* (RBE), "Holography of Soft Tissue", co-advised with C. Furlong (ME), ME CF-HO15 (May 2015).
60. *Rose Carmichael*, *Jordan Kovar*, "Moving Target Trackers", MIT Lincoln Laboratory, co-advised with J. Fehribach (MA), PH GSI-1601 (May 2016 for J. Kovar, May 2017 for R. Carmichael).
61. *Gyneth Campbell* (ME), *Scott Davison* (ME), *Adam Gatehouse* (ME), *Daniel Mortarelli* (ME), "Thermal and Electrical Transport Measurements in Cast and Wrought Aluminum Alloys", co-advised with D. Lados (ME), ME DL1-1701 (May 2017)
62. *Daniel Braconnier* (ME), *Kristin Markuson* (ME), *Mila Maynard* (ME), "Fabrication and Properties of Novel Polymer-Metal Composites Using 3D Printing", co-advised with D. Lados (ME), A. Peterson (CHE), ME AMP-PMCP (May 2017) – ***ASM Chapter 1st Place Award.***
63. *Kevin Martin* (AE)*, Finn O'Brien* (AE/PH), *Eric Periera* (ME), "Peroxide Propulsion Follow-On", MIT Lincoln Laboratory, co-advised with N. Gatsonis (AE/MA), AE NAG-1702 (December 2017).
64. *Ann Kaczowka* (ME), *Nde Aghanui Nkimbeng* (ME), *Justin Coppolino* (ME), "Polymer-Metal Composites", co-advised with D. Lados (ME), ME GSI-1802 (May 2018).
65. *Andrzej Bielecki* (ME), *Dexter Y. Gutierrez* (ME), "Thermal and Electrical Transport Measurements in Advanced Materials", advised with D. Lados (ME), ME DL1-1801 (May 2018).
66. *Takayoshi Tsutsui*, "ICON", advised by Frank Hoy (BUS), FRH-FH18 (May 2018).
67. *Nicholas E. Mears* (PH), "Stochastic Simulations of Non-Equilibrium Thermal Systems", PH GSI-1802 (December 2018).
68. *Joseph V. Calnan* (ME), *Jack A. Grubbs* (ME), *Richard C. Smith* (ME), *Andrea P. Claudio* (ME), "Polymer-Metal Composites", co-advised with D. Lados (ME), ME DL1-1901 (May 2019).
69. *Yash Yadati* (PH/ME), "Experimental and Computational Studies in Far-from-equilibrium Systems like Rayleigh-Bénard Convection", co-advised with R. Daniello (ME), PH GSI-1902 (May 2020).
70. *William Luksha* (PH), "Black-Hole Simulations", co-advised with W. Sanguinet (MA), E-project-081123-203127 (August 2023).
71. *Alexandra Spezzano* (PH), "Explorations in the Modification of Newton's Law of Gravitation and Einstein's Field Equations: Accounting for Dark Energy and Dark Matter", E-project-042524-143435, (May 2024).

V.4.b. Interactive Qualifying Projects (IQP): 26 projects, 50 students

1. *Joshua S. Engstrom* and *Christopher A. Knight*, "Designing an 8th Grade Science Curriculum", IQP –51 GSI-0002 (May 2001).
2. *Michael DeLuc*, "Characteristics of Successful Physics Departments", IQP –51 GSI-0301 (May 2004).

3. *Sumeet Sharma*, *Nathan T. Hanify-Neal*, and *Mordecai Waegell*, "Augmentation of the Physics E&M Labs.", co-advised with C. Koleci, IQP –51 CK-ID04 (December 2004)
4. *Gregory Artim*, *Clifford Harvey*, and *Michael Kavulich*, "Physics in a Box", IQP –51 GSI-0707 (May 2008).
5. *Kyle Pydynkowski*, *Bennett Lessard*, *Konrad Perry*, *John McGinley*, and *Bennie Jones*, "Ongoing Advancement of the Physics Toolbox", co-advised with F. Hutson, IQP –51 GSI-0810 (December 2008).
6. *Andrew Crouse*, "Robert H. Goddard as a Proto-Plan Student", IQP –51 GSI-0801 (May 2009).
7. *Stephen Mann*, "Physics Data Sharing", co-advised with F. Hutson, IQP –51 GSI-0903 (October 2009).
8. *Guy Mann*, *Justin Pombrio*, and *Christopher Wellington*, "Physics and Education Interdisciplinary Qualifying Project", co-advised with F. Hutson, IQP –51 GSI-0902 (May 2010).
9. *Joshua Faucher*, *Daniel Spitz*, *John Vilk*, and *Jennifer Wunschel*, "Physics Lab Toolbox – Collisions Laboratory", co-advised with F. Hutson, IQP –51 GSI-0907 (May 2010).
10. *Meshal Alasfour*, *Brian Grabowski*, and *Brendan Harris*, "Using Media to Enhance Student's Ability to Learn Physics", co-advised with F. Hutson, IQP –51 GSI-0909 (May 2010).
11. *Marc Umbricht*, "Inquiry Based First-Year Physics Laboratories", co-advised with F. Hutson and Y. Zastavker, IQP –51 GSI-1005 (suspended).
12. *Angelos Platanias*, "Using Media to Enhance Student's Ability to Learn Physics", co-advised with F. Hutson, IQP –51 GSI-1008 (May 2011).
13. *Jeremy Moody*, "Physics Laboratory Student Perception Surveys", co-advised with F. Hutson and Y. Zastavker, IQP –51 GSI-1102 (May 2012).
14. *Matthew Fredrick*, "Development of an Inquiry-based Physics Lab", co-advised with F. Hutson and Y. Zastavker, IQP –51 GSI-11005 (May 2012).
15. *Andrew Johns*, "Physics Performance Data Mining", co-advised with F. Hutson and Y. Zastavker, IQP –51 GSI-1106 (May 2012).
16. *Bryan Bergeron*, "Revision of the PH 1120 Laboratory", co-advised with F. Huston, IQP –51 GSI-1201 (August 2012).
17. *Gregory McCarthy*, "Physics Instructional Toolbox", co-advised with F. Hutson, IQP –51 GSI-1303 (May 2014).
18. *Alec Benson, Matthew Mancini*, "Improving the PH-1110/1111/1120/1121 Physics Laboratories", co-advised with G. Phillies, IQP -–51 GDP-9999 (May 2015).
19. *Yu Jing,* "Design of Nuclear Labs for PH1130", IQP –51 GSI-1701 (December 2016).
20. *Jarrett Jacobson*, "Reworking and Improving PH 2101. Principles of Thermodynamics", IQP –51 GSI-1602 (May 2016).
21. *Christopher Pierce* (PH), "A History of Physics at WPI", IQP -51 GSI-1603 (May 2017).
22. *Luke Brown* (MA), *Bintang Hoenbuckle* (AE), *Olivia Leavitt* (BE), "Fukushima I", co-advised with M. Katfolen, D. Medich, I.R. Stoe, IQP –41 GSI-NU01 (May 2018).
23. *Taylor Trottier* (PH), *Yudith Chumsosa* (BE), *Joseph LeBlanc* (BE), "Chernobyl Dogs", co-advised with M. Katfolen, D. Medich, I.R. Stoe, IQP –41 GSI-NU02 (May 2018).
24. *Steven Franca* (BE), *Son Nguyen* (ECE), *Thang D. Pham* (CM), "Fukushima II", co-advised with M. Katfolen, D. Medich, I.R. Stoe, IQP –41 GSI-NU03 (May 2018).
25. *John Kahler* (CM), *Bailey Waterman* (AE), "Sellafield, UK", co-advised with M. Katfolen, D. Medich, I.R. Stoe, IQP –41 GSI-NU04 (May 2018).
26. *Yash Yadati* (PH), "ODPL Web Site Construction", IQP –51 GSI-1801 (May 2020).

V.4.c. Master of Science Graduate Students (M.Sc.) - Physics

1. **11** M.S. degrees earned (exam option) by my graduate students en-route towards their Ph.D.
2. *Kevin Vanslette* (MS, Spring 2013), "Theoretical study of variable measurement uncertainty *h* and infinite unobservable entropy" (self-supported).
3. *Jeffrey Peters*, (BS/MS, Spring 2014), "Model cellular uptake of functionalized gold nanoparticles" (self-supported).

4. *Elizabeth C. Tyree* (MS, Fall 2000 – Summer 2020), "Solar Signals – Possible correlations between the 11-Year Solar Sunspot Cycle and Earthquakes on Earth using the Fourier Transform" (self-supported).

V.4.d. Doctoral Graduate Students (Ph.D.) - Physics, 3 awards noted in **bold**.

1. *Aleksander Roshi* (Summer 2000 – M.S. May 2004 – Ph.D. May 2005), "Effect of disorder through quenched random order on liquid crystalline phase transitions".
   2005- 2016: Senior Research Engineer, Analogic Corp., Peabody, MA
   2016- now: Senior Research Engineer, MIT Lincoln Laboratory, Lincoln, MA.
2. *Saimir Barjami* (Summer 2001 – M.S. May 2004 – Ph.D. May 2005), "Calorimetric spectroscopy techniques: RF-heat modulation and heat capacity bridge".
   June- August 2005: Physics Research Scientist, WPI, Worcester, MA.
   2005- 2010: Physics Lecturer, Cal. Poly. State U., San Luis Obispo, CA.
   2011- now: Physics Instructor, Lamar University, Beaumont, TX.
3. *Florentin Cruceanu* (Fall 2003 – M.S. May 2006 – Ph.D. May 2008), "Dielectric spectroscopy study of quenched random disorder on liquid crystalline phase transitions".
   2008- 2010: Physics Instructor, Toronto School System, Toronto, Canada.
   deceased: May 2010
4. *Rajratan Basu* (Spring 2007 – M.S. May 2009 – Ph.D. May 2010), "Dielectric studies of nanostructures and directed self-assembled nanomaterials in nematic liquid crystals".
   2009 1st Place, Science Division, Graduate Research Achievement Day (GRAD).
   2010 Sigma Xi Outstanding Ph.D. Research Award
   2010- 2012: Post-doctoral Fellowship, Prof. C. Rosenblatt, Case Western Reserve University.
   2012- 2017: Assistant Professor of Physics, U.S. Naval Academy.
   2017- now: Associate Professor of Physics (tenured), U.S. Naval Academy
5. *Nihar Pradhan* (Fall 2007 – M.S. May 2009 – Ph.D. May 2010), "Thermoconductivity of nanowires, nanotubes, and polymer-nanotube composites".
   2010- 2012: Post-doctoral Fellowship, U. of Mass. Amherst.
   2012- 2017: Post-doctoral Research Scientist, National High-Magnetic Field Laboratory, FL
   2017- now: Assistant Professor Of Physics, Jackson State University, FL
6. *Krishna Sigdel* (Spring 2007 – M.S. May 2009 – Ph.D. May 2011), "Phase transitions studies of liquid crystal colloids with solvents and nano-solids".
   2011: 3rd Place Science Division, GRAD
   2011- 2018: Post-doctoral Fellowship, Prof. Gavin M. King, U. of Missouri, Columbia.
   2018- now: Assistant Professor of Physics, Cal. Poly. State U., Pomona, CA.
7. *Parvalathlu Kalakonda* (Fall 2010 – M.S. May 2011 – Ph.D. May 2013), "Thermodynamic and thin film study of liquid crystalline polymers, polymers, and nano-particle colloidal dispersions".
   2013- 2014: Post-doctoral Fellowship, Prof. M. Islam, Carnegie Mellon University.
   2014- now: Research Scientist, Indian Institute of Science, University in Bengaluru, India.
8. *Klaida Kashuri* (Summer 2005 – M.S. May 2008 – Ph.D. May 2014), "Calorimetric study of protein unfolding and self-assembly of sterols/biomaterials".
   2014- 2016: Adjunct Lecturer, Dept. of Physics, WPI.
   2016- 2018: Adjunct Lecturer, Dept. of Natural Sciences, Assumption College.
   2018- 2021: Adjunct Lecturer, Physical Sciences, Becker College
   2021- now: Programmer for start-up company.
9. *Saad Al-Garni* (Fall 2010 – M.S. May 2011 – Ph.D. May 2015), "Development and application of an Area Recorded Generalized Optical Scattering – *ARGOS* – technique" (fully supported by Saudi Government).
   2015- now: Assistant Professor of Physics, King Saud University, Saudi Arabia.
10. *Atanu Chatterjee* (Spring 2016 – M.S. May 2017 – Ph.D. May 2020), "Studies on the Emergence of Order in Out–of–equilibrium Systems".

2020- now: Post-doctoral Fellowship, Prof. Ofer Feinerman, Weizmann Institute of Science, Israel.

11. *Anusuya Pal* (Summer 2017 – M.S. May 2018 – Ph.D. May 2021), "Self-Assembly and Morphological Patterns in Drying Droplets of Bio-colloids".
    2021- now: Post-doctoral Fellowship, Prof. Marco Polin, University of Warwik, Coventry, UK.
12. *Mashael A. Alghamdi* (Spring 2012 – M.S. May 2014 – Ph.D. now), "Ellipsometry of thin-films and nano-composites". (fully supported by Saudi Government).

V.4.c. Research Associates / Research Group Members

Dr. Dipti Sharma, Post-doctoral Associate (July 2004- June 2007).
Dr. Saimir Barjami, Research Scientist (June 2005- August 2005).
Dr. Hektor Kashori, Associate Teaching Professor (August 2009- now)
Dr. Sabyasachi Sarkar, Assistant Teaching Professor (August 2011- 2015)

V.5. Independent Studies Lead

Independent study areas guided include the physics of liquid crystals, phase transitions, calorimetry, NMR, thermodynamics, and critical phenomena. Have also offered as IS/P (undergraduate) to cover courses out of sequence based on student needs at all levels.

From 1998 to 2016: **37** Independent Study/Project (IS/P) and **18** Independent Study Graduate (ISG)

V.6. Academic Advising

From 1998 to 2013: typically carried **7-9** primary and **2-4** secondary advisees per academic year.
Insight Advisor for AY2004/05 and AY2005/06.
Academic Advisor for Alpha Phi Omega (APO), WPI's largest service co-ed fraternity, 2013- now.
Academic Advisor for the Society of Physics Students (SPS), 1999- 2003, 2013/14.