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EDUCATION

University of South Florida, Department of Physics, Tampa, FL Expected 2023
Ph.D. Candidate in Applied Physics

Dissertation: Exploring Novel Atomically Thin Dilute Magnetic Semiconductors and Heterostructures for Spintronics and Quantum Applications

Advisor: Dr. Manh-Huong Phan

Committee: Drs. David Mandrus (University of Tennessee), Hari Srikanth, Sarath Witanachchi, Minh Tuan Trinh (Utah State University)

Hanoi National University of Education, Department of Physics, Vietnam 2018
B.Sc. in Physics Education

Thesis: Fabrication of BiVO₄-Based Photoanode for Solar Water Splitting

Advisor: Dr. Phong Dinh Tran

RESEARCH INTERESTS

- Identification and fundamental property measurement of novel magnetic materials
- Magneto-transport, magneto-optics of two-dimensional (2D) transition metal dichalcogenide semiconductors, van der Waals magnets, and heterostructures
- Magnetic proximity effect and interface-driven magnetic phenomena

HONORS AND AWARDS

USF Dissertation Completion Fellowship 2023

DAAD Rise Professional Scholarship, Germany 2022
Recipient of full scholarship by the German government to do an internship at Paul Drude Institute for Solid State Electronics in Berlin

Frank Duckwall Applied Physics Graduate Fellowship, USF 2022
Recipient of a \$2800 scholarship to carry out my research and industrial practicum during the Summer of 2022.

Joint MMM-Intermag Conference Student Travel Award 2022

SAKURA Science Exchange Scholarship, Japan 2016
Recipient of a full scholarship to travel and participate in the exchange program of science and technology in Tokyo, Japan

Bronze Medal, The University Physics Competition 2016
An international competition sponsored by the American Physical Society and the American Astronomical Society

PUBLICATIONS

Peer-Reviewed Articles

1. C.M. Hung, D.T.X. Dang, A. Chanda, D. Detellem, N. Alzahrani, N. Kapuruge, **Y.T.H. Pham**, M. Liu, D. Zhou, H.R. Gutierrez, D.A. Arena, M. Terrones, S. Witanachchi, L.M. Woods, H. Srikanth, and M.H. Phan. *Enhanced Magnetism and Anomalous Hall Transport through Two-dimensional Tungsten Disulfide Interfaces*. **Nanomaterials** (2023) 13, 771 (doi.org/10.3390/nano13040771)
2. M.H. Phan, V. Kalappattil, V.O. Jiménez, **Y.T.H. Pham**, N.W.Y.A.Y. Mudiyansele, D. DeTellem, C.M. Hung, A. Chanda, and T. Eggers. *Exchange bias and interface-related effects in two-dimensional van der Waals magnetic heterostructures: Open questions and perspectives*. **Journal of Alloys and Compounds** (2023) 937, 168375 (doi.org/10.1016/j.jallcom.2022.168375)
3. A. Chanda, D. DeTellem, **Y.T.H. Pham**, J.E. Shoup, A.T. Duong, R. Das, S. Cho, D.V. Voronine, M.T. Trinh, D. A. Arena, S. Witanachchi, H. Srikanth, and M.H. Phan. *Spin Seebeck effect in Iron Oxide Thin Films: Effects of Phase Transition, Phase Coexistence, and Surface Magnetism*. **ACS Applied Materials & Interfaces** (2022) 14, 11, 13468-13479 (doi.org/10.1021/acsami.1c23284)
4. V.O. Jiménez, **Y.T.H. Pham**, M. Liu, F. Zhang, Z. Yu, V. Kalappattil, B. Muchharla, T. Eggers, D. L. Duong, M. Terrones, and M.H. Phan. *Light-Controlled Room Temperature Ferromagnetism in Vanadium-Doped Tungsten Disulfide Semiconducting Monolayers*. **Advanced Electronic Materials** (2021) 7, 2100030 (doi.org/10.1002/aelm.202100030)
5. F. Zhang, B. Zheng, A. Sebastian, H. Olson, M. Liu, K. Fujisawa, **Y.T.H. Pham**, V. Ortiz Jiménez, V. Kalappattil, L. Miao, T. Zhang, R. Pendurthi, Y. Lei, A.L. Elias, Y. Wang, N. Alem, P.E. Hopkins, S. Das, V.H. Crespi, M.H. Phan, and M. Terrones. *Monolayer Vanadium-doped Tungsten Disulfide: A Room-Temperature Dilute Magnetic Semiconductor*. **Advanced Science** (2020) 7, 2001174 (doi.org/10.1002/advs.202001174)
6. **Y.T.H. Pham**, M. Liu, V. Ortiz Jiménez, Z. Yu, V. Kalappattil, F. Zhang, K. Wang, T. Williams, M. Terrones, and M.H. Phan. *Tunable Ferromagnetism and Thermally Induced Spin Flip in Vanadium-Doped Tungsten Diselenide Monolayers at Room Temperature*. **Advanced Materials** (2020) 32, 2003607 (doi.org/10.1002/adma.202003607)

Manuscripts in Progress

1. **Y.T.H. Pham**, K.N. Cong, T. Zhang, M. Liu, D. Zhou, V.O. Jimenez, V. Kalappattil, F. Zhang, K. Fujisawa, A.L. Elias, T. M. Trinh, I. I. Oleynik, M. Terrones, and M.H. Phan. *Emergent Ferromagnetism in Fe-doped WS₂ Monolayers at Room Temperature: Experimental and First-Principles Studies*. (in preparation)

2. **Y.T.H. Pham**, D. Zhou, M. Liu, V.O. Jimenez, T. Zhang, T. Eggers, T. M. Trinh, M. Terrones, and M.H. Phan. *New Research Trends in Two-Dimensional van der Waals Dilute Magnetic Semiconductors*. (in preparation)

CONFERENCE PRESENTATIONS

Oral Presentations

1. **American Physics Society (APS) March Meeting**, Las Vegas, NV. 2023
Interface-enhanced Magnetism in Two-dimensional V-doped MoS₂ /Graphene Heterostructures
2. **Joint Annual Conference on Magnetism and Magnetic Materials-Intermag**, New Orleans, LA. 2022
Emergent ferromagnetism in Fe-doped WS₂ monolayers at room temperature: experiment and first-principles studies
3. **International Workshop on Advanced Materials Science and Technology**, Ninh Binh, Vietnam. 2018
Fabrication of Mo-doped BiVO₄-based photoanode for solar water splitting

Poster Presentations

1. **Quantum Mater and Beyond**, Jacksonville, FL. 2021
Emergent ferromagnetism in Fe-doped WS₂ monolayers at room temperature: experiment and first-principles studies
2. **Annual Conference on Magnetism and Magnetic Materials** (online) 2020
Extended Bloch's law description of two-dimensional dilute magnetic semiconductors

RESEARCH EXPERIENCE

Graduate Research

2018-Present

University of South Florida, Tampa, FL

Advisor: Dr. Manh-Huong Phan

- Investigated fundamental properties of 2D van der Waals magnets
- Performed magnetic characterizations (magnetometry, magneto-optics, atomic/magnetic force microscopy, etc.) of 2D transition metal dichalcogenide semiconductors and heterostructures
- Collaborated with national and international research groups to study magnetic phenomena in emerging low-dimensional van der Waals materials. Our research was featured in *Advance Science* and *Advance Materials* journals
- Collaborated with computational physicists at USF in developing a method to study defective magnetism in 2D doped-TMD materials
- Repaired and provided training on the wire bonder for transport measurements in the Nanotechnology Research and Education Center

Research Intern 2022

Paul Drude Institute for Solid State Electronic, Berlin, Germany

Advisor: Dr. Joao Marcelo J. Lopes

- Investigated structural and magnetic properties of MBE-grown $\text{Fe}_5\text{GeTe}_2/\text{h-BN}$ system using atomic/magnetic force microscopy and Raman spectroscopy

Undergraduate Research Assistant 2017-2018

University of Science and Technology of Hanoi, Vietnam

Advisor: Dr. Phong Dinh Tran

- Fabricated and characterized structured and electrochemical properties of BiVO_4 -based photoanode for solar splitting water application

TEACHING EXPERIENCE

Instructor, Department of Physics, University of South Florida 2019, 2023

Course: General Physics Laboratory I and II

- Instructed (90+) students in experimental physics laboratories
- Designed teaching modules, activities, and assessments; set up experiments; led in-class study sessions

Teaching Assistant, Department of Physics, University of South Florida 2019-present

Courses: Enrich General Physics I and II, Modern Physics, Conceptual Physics

- Led (500+) students in recitation/problem-solving sessions
- Designed class materials (tests, homework, problem-solving practice)
- Evaluated assignments
- Assisted students during office hours

Adjunct Lecturer, Department of Physics, University of South Florida 2020

Course: Online General Physics Laboratory II

- Instructed nearly 200 students in the Online General Physics II Course.
- Developed course materials including lectures, practice problems, homework, exams, proctoring
- Integrated technology as simulations in demonstrated physical concepts
- Assisted students during office hours

PROFESSIONAL TRAININGS

Google Data Analytics Professional Certificate Expected 2023

Project Management (LinkedIn Training) Expected 2023

USF Graduate Professional Development Certificate Expected 2023

UNIVERSITY AND PROFESSIONAL SERVICES

Professional Service 2021
Manuscript Reviewer, AIP Advances

University Service 2022-Present
President of The Physics Graduate Student Committee

- Acted as liaison between graduate students and Department of Physics faculty/staff
- Restructured and expanded the executive board by recruiting Vice Presidents of Academic Affairs and Social Affairs
- Proposed new agenda of activities: launched Professional Development Workshop series and Career Talks series, organized the first Mental Health Support workshop, and oversaw other social events for physics students
- Prepared Graduate School Handbook for physics students

OTHER ACTIVITIES

Run Tampa, Long Distance Running Club 2021-Present

- Participated in 2022 Chicago Half-marathon, 2021 US Army 10 Miler, 2021 Miles for Moffitt 10K, 2021 Fort De Soto Half-Marathon

Head Mentor, Math and Science Summer Program 2017-2018

- Recruited and mentored high school students to participate in research experiences related to chemistry and materials science
- Supervised mentors and students in laboratory activities

Science Teacher, Olympia and Wellspring International Highschool, Vietnam 2017-2018

- Developed Physics curriculum and learning materials for secondary and high school students
- Designed activities and co-organized STEM summer camp for elementary students

Scientific Assistant, International Biology Olympiad 2016

- Monitored the experimental tests and assisted the jury committee in participant evaluation

SKILLS

Technical skills

- Magnetometry (Vibrate Sample Magnetometer)
- Atomic Force Microscopy
- Magnetic Force Microscopy
- Photolithography
- Wire Bonding
- Raman and Photoluminescence Spectroscopy

Programming skills

- MATLAB, UNIX, QUANTUM ESPRESSO (introductory)