

John Patrick Harris

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January 15, 2021

Marsha J. Freeland

Director, Faculty Success Programs
WANG 4044
Purdue University
(765) 494-5341
MJFreeland@Purdue.EDU

Dear **Marsha Freeland**,

I am writing this letter to you to express my interest in Purdue University's Black Trailblazers in Engineers Event. Currently I am a Ph.D student at Norfolk State University and I hope to achieve completion of my degree by the end 2021.

Looking at the Black Trailblazers in Engineering program it seems to provide ideal content that will essentially assist Graduate Students for the best route to take and a guideline to follow to find academic employment that will fit the academic desire of the student.

I am the first of my immediate family to have the opportunity to make it this far and I would like to make my parents proud by completing some of the dreams I have had to be able to work in Academics as teacher. Therefore. I believe that attending this program will be very beneficial. I hope that it will provide guidance on what to consider when considering a role as a professor in Engineering and where the best location is to look.

Below you will find a short Education and Research Plan, and also a Curriculum Vitae attached for your review. And I look forward to hearing from you soon.

Sincerely,
John Patrick Harris

Education and Research Plan

My hope for this program is to learn more about steps to become a faculty member at an institution. I would also like to know how to obtain grants and the requirements that are necessary to apply for these grants as a faculty member.

Over the next 10 months I hope to apply for an academic position based on the tips and information that is received from this seminar. I hope to apply to become a faculty member an accepted year here at Norfolk State University and my hope is to be able to teach interesting methods to educate students and do research in areas that many students do not have the same opportunity to experience. that can also be used to teach skills that will help benefit the students later on in life. competing with other schools. Also my hope is to be able to use the grants to look further research in a particular area that was researched while completing my Ph.D and to be able to do further research concerning the material at some University.

My goal is to be able to apply for a position here at Norfolk State University and then use the skills that I have obtained from this seminar to work as a faculty member here that can contribute to the school in a beneficial way and yet also be able to contribute to the body of research as a whole.




JANUARY 15, 2021

BLAZING TRAILBLAZERS IN ENGINEERING

CURRICULUM VITAE

HARRIS, JOHN P.
NORFOLK STATE UNIVERSITY
PH.D Student – Material Science and Engineering



Mr. John Patrick Harris

1006 Rowe Street, Hampton, Virginia (757)752-8013

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Objective

Dedicated doctoral student in Material Science and Engineering, seeking a position in academia. Jobs that will lead me to becoming an engineering Professor and Research Faculty. In addition, Faculty positions that pursue educational grants or contracts for universities and through research conducted and outreach activities that may assist those medically impaired or disadvantaged.

Education

Norfolk State University

Doctoral: Material Science and Engineering

Expected Graduation 2021

Norfolk, VA

Norfolk State University

Bachelor of Science: Optical Engineering

Graduated May 2016 B.S Degree: Summa Cum Laude Honor Graduate

Norfolk, VA

Tidewater Community College

Engineering

Graduated May 2013 A.S Degree: Honor Graduate

Virginia Beach, VA

Work Experience

Norfolk State University, MCAR, MICRON NSU CLEANROOM

Cleanroom Squad Member, Teaching Assistant, and Lab Manager, Grad Student

05/2016 – Present

Norfolk, VA

- Trained on the Thermal Evaporation Deposition Technique of Deposition
- Developed Training material for Thermal Evaporation Deposition technique to share with NSU Military Veterans program.
- Attended meetings to develop robust training program at NSU for graduate, undergraduate students, and any other person who is interested in using the lab.

Norfolk State University, College of Sciences, Engineering and Technology (CSET) in Physics Dept.

Physical Science Lab Instructor and Teaching Assistant

01/2020 – 05/2020

Norfolk, VA

- Prepared lab setup.
- Instructed individual labs on operation of lab equipment.
- Prepared lecture material to discuss theoretical background for lab.
- Presented lecture of lab material and operation of lab equipment during lab.
- Received labs and graded them.
- Conducted make-up labs.
- Posted scores in Blackboard for professor to post final grade online for students.

Norfolk State University, College of Sciences, Engineering and Technology (CSET) in Physics Dept.

University Physics I & II - Lab Instructor and Teaching Assistant

09/2018 – 12/2019

Norfolk, VA

- Prepared Lecture materials to discuss theoretical background for individual labs in Calculus based Physics.
- Presented lecture of lab material and discussion of operation of lab equipment.
- Provided tutoring and additional lab time for students to make-up labs.
- Provided lab hours and online access to discuss submitted labs.
- Performed Lab setup of equipment for each groups' lab station.
- Practiced Labs ahead of time to ensure labs functioned properly at each station.
- Recorded detailed lab information as practiced labs.
- Calculated numbers to ensure students values were close to expected values

- Assigned and Graded Lab

NASA Independent Contractor, Norfolk State University

*Lab Head and Manager, Vacuum Deposition Researcher
VA*

*02/2018 – Present
Hampton,*

- Developed designs for III-V Semiconductor Deposition Chamber
- Researched best techniques for development
- Performed maintenance on existing equipment and ensured proper operation.
- Assisted with acquisition of parts for design and testing of Vacuum deposition chambers.
- Operated RF-DC Magnetron Sputterer to Coat Silicon wafers.
- Analyzed Samples utilizing XRD to characterize lattice orientation

Norfolk State University, MCAR – Crystal Physics and Quantum Electronics Lab

Researcher, TA, and Lab Manager, Grad Student

*05/2016 – Present
Norfolk, VA*

- Performed Optical Setups and Optic and Photonic related experiments
- Designed Z-Scan Spectroscopic setup to analyze materials
- Perform routine maintenance of lab equipment to ensure properly functioning.
- Measured and analyzed the absorption spectroscopy of a base and Ag Particles using Lambda 1050 Perkin Elmer and Ocean Optic ISS-UV/VIS Spectrometer.
- Proctored Physics I and II courses.

Norfolk State University – McDemmond Center of Applied Research (MCAR)

Undergraduate Lab Research Assistant – Laser Group

*01/2015 – 05/2016
Norfolk, VA*

- Assisted in preparation of lab for development of Nd:Yag Laser used for Ultraviolet Laser Ablation for National Science Foundation grant
- Prepared inventory of Lab Materials in Microsoft Excel for Lab
- Reviewed Journals on Ultraviolet Laser Ablation in preparation of etching of metallic materials using photonic rays

Norfolk State University - McDemmond Center of Applied Research (MCAR)

Undergraduate Lab Research Assistant - Nanotechnology group

*08/2014 – 05/2016
Norfolk, VA*

- Assisted doctoral student in development of Resistive Switching device for Department of Defense Grant
- Reviewed journals on resistive switching and magnetic devices provided by doctoral student
- Prepared sample of LSMO utilizing a pulse laser deposition machine under doctoral student
- Cleaned substrates for growth in the pulse laser deposition machine
- Attended weekly meetings with nanotechnology group for review presentations

InFiNeXT Educational Solutions

05/2014

Calculus III Tutor

12/2013 –

Irmo, SC

- Tutored Clemson University student in Calculus III via online meetings.
- Prepared lessons and assisted in assigned homework from teacher.

Timmons Group

GIS Field Survey Technician

*05/2012 – 08/2012
Virginia Beach, VA*

- Logged city manholes using GPS receiver [R6] and tripod.
- Opened manholes utilizing safety cones, safety equipment and sledge-hammer
- Measured depths and determined upstream or downstream flow of water in pipes. □ Determined classification of all opened sewer pipes as, concrete, steel, or clay.

City of Chesapeake

05/2009 – 09/2009

Civil Engineering Internship - Public Works and Public Utilities Departments

Chesapeake, VA

- Reviewed City Plans and assisted with the calculations of the slopes of curb and gutter for George Washington Highway
- Utilized total station to take topographic survey and utilized Eagle Point to map points used AutoCAD to change values of elevation
- Utilized ArcView to assist calculating daily flow rates for Pump Stations
- Utilized excel to input values

Parsons Brinckerhoff Quade & Douglass

03/2008 – 08/2008

Civil Engineering Technician II, Intern

Norfolk, VA

- Designed Fat, Oils, and Grease Interceptor schematic utilizing AutoCAD 2008, designed for presentations and manuals
- Created profile plans of pipes at different elevations on Hampton Roads Sanitation District Project design team.
- Assisted with Traffic Counting at peak flow times in Virginia Beach for I-495 Arterial Analysis.

New Macedonia United Church of Chris

10/2007-12/2009

Audio Engineer, DJ, Photographer, Social Media Content

Norfolk, VA

- Recorded Morning and afternoon services for WTJZ 1270 AM
- Developed social media site for the church posted sermons and music.
- Assisted with development and distribution of marketing concert event material.
- Maintained and managed all audio equipment before, during, and after service.

JRH Design & Construction, Inc.

07/2005 – 10/2007

Assistant to Program Manager

Portsmouth, VA

- Attended preconstruction meetings and took minutes and notes for meetings.
- Reviewed plans and specifications for submittal to NAVFAC.
- Assisted in the acquisition of projects for company.
- Assisted in preparation of APP and CQC Manuals, submitted to NAVFAC.

Curriculum Vitae*Tidewater Community College – A.S. Engineering**English*

ENG 111 - English Composition, ENG 112 – College Composition II

Engineering

SDV 101 – Orientation to Engineering & Technology

EGR 120 – Introduction to Engineering

EGR 140 – Engineering Mechanics-Statics

EGR 245 – Dynamics

CHM 111 Chemistry I and Chemistry I Lab

PHY 241 - Physics I and Physics I Lab

EGR 110 – Engineering Graphics,

EGR 125 – Intro to Engineering Methods

EGR 246 - Mechanics of Materials,

CHM 112 - Chemistry II and Chemistry II Lab

PHY 242 - Physics II and Physics II Lab

Math

MTH 173 - Calculus I

MTH 279 - Differential Equations

MTH 174 – Calculus Analytic Geometry II

MTH 277 - Vector Calculus

Humanities and Social Science

MKT 100 – Principles of Marketing

MUS 145 – Applied Music – Keyboard (Piano)

HIS 121 - United States History

PED 116 – Lifetime Fitness & Wellness

PHI 101 - Philosophy

MUS 245 – Adv Applied Music – Keyboard (Piano)

ECO 120 – Survey of Economics

Norfolk State University - B.S. Optical Engineering

Optical Engineering

SCM-285 – Principles of Speech
MTH 351 – Probability and Statistics
OEN-200 - Geometrical & Instrumental Optics
OEN-201 - Physical and Instrumental Optics
EEN 201 - Electrical Network Theory I
EEN-203 - Electronic Principles
OEN-320 - Optical System Analysis
OEN-340 - Laser and Photonics
OEN-380 - Introduction to Quantum Optics
OEN-460 - Optical Communications I
OEN-461 - Optical Communications II
OEN 471 - 3D-Printing and Laser Design
OEN-499 Senior Design Project – (Stage II) – Drone Project

MTH-300 - Linear Algebra,
EEN-311 - Engineering Economics
OEN-200L Geometric & Instrumental Optics Lab
OEN-201L - Physical and Instrumental Optics Lab
EEN 201L -Electrical Network Theory Lab I
EEN 482 - Bioelectrics
OEN-360 - Introduction to Optical Materials
OEN-340L - Laser and Photonics Lab,
EEN-321 - Electro Magnetic Field Theory
OEN-460L - Optical Communications I Lab
OEN-461L – Optical Communications II Lab
OEN-498 - Senior Design Project – (Stage I) Drone Project

Norfolk State University – Ph.D Material Science and Engineering

CHM 545 – Mathematical Methods
MSE 530 – Materials Science
MSE 535 –Electronic and Optical Materials
MSE 575 – Instrumentation
MSE 601 – Material Science and Engineering Seminar
MSE 607 – Materials for Nanotechnology
MSE 697 – Research I
MSE 699 – Research III
MSE 897 – Research I
MSE 899 – Research III
MSE 999 – Continuing Registration

MSE 533 – Polymers/Composites
PHY 580 – Quantum Mechanics and Materials
EEN 541 - Biomedical Systems, Devices and System Design,
MSE 600 – Material Science and Engineering Seminar
MSE 605 – Ethics of Scientific Research & Professionalism
MSE 635 – Optical Materials
MSE 698 – Research II
MSE 770 – Materials Science Doctoral Qualification
MSE 898 – Research II
MSE 900 – Dissertation

Skills

- Proficient at AutoCAD, AutoCAD Civil 3D, AutoCAD Map, Autodesk Inventor, MatLab, Multisim, Eagle Point to complete design needs.
- Proficient at Microsoft Excel, Word, and Power Point WinEst, RISA 2D, HyrdoFlow, Hcalc, and Pumpbase, Adobe Acrobat Professional, PDF X-Change, Bentley MicroStation, MathCAD, C++, Dreamweaver, ArcView, ArcMap
- Experience with HTML, Audio Engineering, Lasers, Fiber Optic Communication
- Soldering, Building Electronic Devices, Flying Drones, Leading Teams
- Proficient in Spanish
- Experience with French
- Semiconducting Research
- Thin Film Deposition

Honors

- NSU T-CUP Scholar (Two Year Community College to Bachelors)
- TCC Dean’s List
- TCC Associates of Engineering Honors Graduate
- NSU Honors College [2014-2015]
- NSU Presidential Award
- 2nd Place Award – NSU Research Symposium [2015]
- 17th Place AUVSI International Drone Competition [2018]
- 6th Place in AUVSI International Drone Competition Mission and \$ 1050 Award [2018]

Extracurricular Activities

- Preacher
- Christian Disk Jockey / Audio Engineer
- University Tutor
- Gold Licensed USA Basketball Coach
- President, Society of Optics and Photonics [SPIE] [2018]
- Team Captain, Software Lead, Optics Lead, UAV Team [2016 - 2018]
- Volunteer, FTC Eastern Qualifier [2015]
- Head coach, Friarsgate Basketball Association [2013-2014]
- President, TCC Engineering Club [2012]
- Secretary, Mu Alpha Theta [Math Honor Society] [2012]
- Senator, SGA [Student Government Association] [2011-2012]
- Guard, TCC Summer Basketball Team [Summer 2012]

References

Available Upon Request



DEPARTMENT OF ENGINEERING
700 Park Ave., Norfolk, Virginia 23504
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nsu.edu/engineering

February 2, 2021

TO: Committee
Purdue Engineering's Black Trailblazers in Engineering (BTE) program

Dear Committee,

It is my pleasure to write a letter of recommendation for Mr. John Patrick Harris is applying for Purdue Engineering's Black Trailblazers in Engineering (BTE) program. I am currently a Professor of Engineering Department and Center for Materials Research (CMR) at Norfolk State University. I have known John since he transferred from Tidewater Community College to NSU engineering as an undergraduate student. I taught OEN 200 (Geometrical Optics) and EEN 411 (Engineering Economic) which are engineering requirement courses for John. In the class, John has been actively engaged in many discussions and demonstrated his intention and motivation. Currently, he joined our Ph. D in Materials Science and Engineering program as my advisee. He is working at Smart Optics Materials Research in collaboration with NASA Langley Research Center. One of his assigned jobs is to develop a new sputtering system to grow smart optical materials and develop sensor and devices for space exploration.

Norfolk State University has a state-of-the-art infrastructure for micro-/nano- research and education in the McDemmond Center for Applied Research (MCAR), including a 6,000 square-foot clean room facility (class 10/100), and a 4,000 square-foot characterization lab. This center is a strategic hub for applied research and the generation of technological innovations that will serve the entire Hampton Roads region in becoming a key high-technology gateway for the southeastern United States. MCAR also houses the infrastructure acquired through our consecutive two NSF-RISE projects, various NSF MRI Grants, and NSF CREST project which will serve as a base structure of the NSU micro-fabrication facility. Recently, we also opened a small educational clean room (~700 sqft) for undergraduate micro-fabrication education that is located at NSU Robinson Technology Center. John has been working in various research labs with other graduate students in our laboratories since he joined. He also actively engaged in AUVSI Drone competition, third times NSU joined. Our NSU team received 17 ranks out of 69 international teams participated in 2018, and John was the team leader.

Based on my observation including personal conversations with him, he has strong motivation and intention about research works. Therefore, I am very exciting to support one of our prospective students to Purdue Engineering's Black Trailblazers in Engineering (BTE) program. He is working hard, and actively engaged in various university activities including his undergraduate research activity in laser, nano/mems, and drone project at NSU. Overall, I would recommend to your program without any reservation.



NORFOLK STATE
UNIVERSITY

We see the future in you.
Sincerely,

Dr. Kyo D. Song,
Professor
SPIE Fellow
Department of Engineering
Norfolk State University
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DEPARTMENT OF ENGINEERING

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