



# University of Pittsburgh

*Swanson School of Engineering*  
*Department of Mechanical Engineering and Materials*

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**Position:** Photonic Materials and Fiber Optic Sensor Materials Researcher (PhD, MS)

**Position Contact:** Prof. Paul Ohodnicki, [pro8@pitt.edu](mailto:pro8@pitt.edu)

## **Position Description:**

The Department of Mechanical Engineering and Materials Science (MEMS) at the University of Pittsburgh invites applications for a graduate student researcher with an emphasis on photonic materials and thin films, as well as fiber optic sensing technology. The graduate student position will benefit from an opportunity to partner with an interdisciplinary research group of undergraduate, graduate, and PhD level researchers, and to engage with the [University of Pittsburgh Infrastructure Sensing Collaboration](#) based at the University of Pittsburgh. In addition, the student can expect close collaboration with other researchers from industry and the national laboratory system including Department of Energy, Department of Defense, and both large and small companies ranging from sensing materials and device research to application and field testing.

The advisor will be Prof. Paul Ohodnicki, and the graduate student researcher will have full access to facilities available within the Ohodnicki Lab (<https://www.engineering.pitt.edu/OhodnickiLab/>) at the University of Pittsburgh, the extensive shared facilities of the University of Pittsburgh Infrastructure Sensing Collaboration (UPISC, <https://www.engineering.pitt.edu/UPISC/>), and the Petersen Nanoscale Fabrication and Characterization Facility (NFCF, <https://www.tour.pitt.edu/tour/nanoscale-fabrication-and-characterization-facility>) amongst other facilities across campus.

More information about the Ohodnicki Lab research focus and interests can be found here:

<https://www.youtube.com/watch?v=7Vn7XJmHGr4&feature=youtu.be>

Successful applicants should display a strong interest in synthesizing and characterizing thin film optical materials and interest to learn and apply standard spectrophotometry techniques as well as to perform representative sensing experiments. In addition, students should have a strong interest in understanding the impact of optical and photonic material properties on performance as well as the origin of these properties in thin film and nanocomposite systems with multiple phases mixed at the nm-scale.

Applicants should have an undergraduate degree in materials science and engineering, applied physics, electrical engineering or a related field. Prior experience research in thin films, photonics, optics, fiber optics, nanofabrication, material characterization, and optical spectroscopy is beneficial but not required. This project offers ample opportunity to develop relevant skills including sputter deposition, wet chemical synthesis, x-ray diffraction, electron microscopy, optical spectroscopy, optical thin film modeling, finite element simulation, ellipsometry, and other optical modeling methods.

Anticipated project work assignments will include characterization and synthesis of optical and photonic materials and thin films, fiber optic sensor devices, and characterization of both functional performance (i.e. sensor performance) and material structure and properties. In addition to conducting research, duties will also include preparing reports, performing literature reviews, supervising undergraduate students, and assisting with other projects.

## **Application Process:**

Interested students should contact Prof. Paul Ohodnicki ( [pro8@pitt.edu](mailto:pro8@pitt.edu) ) and also submit an application for the MS or PhD program at the following link: <https://www.engineering.pitt.edu/graduateapplications>