



Amorphous silicon thin film lab

## Graduate Study in Physics and Astronomy

[www.physics.utoledo.edu](http://www.physics.utoledo.edu)

**Degrees offered:** M. S., M. S. E., Ph. D. in physics; concentrations in astronomy/astrophysics and in materials science; joint M. S. program with Electrical Engineering and Computer Science; Ph. D. concentration in medical physics offered jointly with Dept. of Radiation Oncology

**Faculty:** 20 active faculty effective fall 2010

### Research

**Astrophysics** Cosmochemistry; interstellar molecular gas; spectroscopy, polarimetry, and theory of stellar winds, disks and envelopes; Galactic and extragalactic star formation, star clusters, and interstellar dust; computational methods

**Atomic physics** Rydberg state lifetimes; accelerator-based optical/UV spectroscopy and collision studies

**Biological physics** DNA bonding and structure

**Experimental materials science/thin films** Photovoltaics; nanomaterials; hydrogen sorption; surface growth

**Medical physics** Accelerator-based research in radiation oncology; Monte Carlo simulations in imaging detectors and other clinical research

**Photonics** Theory and design of optical integrated circuits, components, and devices

**Theoretical/computational physics** Nano-materials, surfaces and interfaces, film growth, disordered systems, phase transitions, photovoltaics; quantum many-body systems, atomic structure; plasma physics of low-pressure discharges

### On-campus research facilities

1-meter telescope, spectrographs, CCD cameras

Heavy-ion accelerator (300 keV), negative-ion accelerator

Thin film deposition systems: glow-discharge and hot-wire deposition, sputtering, MBE, *in situ* spectroscopic ellipsometry

Materials and device characterization: magneto-optical Kerr effect, Raman, photoluminescence, AFM/STM, SEM/EDS, quantum efficiency, and current-voltage under solar simulation

Two Beowulf computer clusters, easy access to Ohio Supercomputer Center, Internet 2

### Administrative

**For admission:** Undergraduate GPA 2.7 or better; competitive. Provide official transcript and 3 letters of recommendation. GRE General required, physics subject test encouraged. *Deadline:* Completed applications for fall should be at the Graduate School by 15 January in order to be considered in the first round. *International students:* TOEFL  $\geq$  213 or equivalent.

**Assistantships:** Stipend is competitive. Tuition is waived.

**For more information and to apply:** [www.physics.utoledo.edu](http://www.physics.utoledo.edu)

**Inquiries:** Prof. Randy Ellingson, [relling2@UTNet.UToledo.Edu](mailto:relling2@UTNet.UToledo.Edu)

28 May 2010