Research in Optoelectronics
School of Materials Engineering, NTU

2005-6-8
Outline

Introduction to optoelectronics

Job prospects for students

Scholarships for students

How to apply for admission / Contact us
What is optoelectronics?

Photon + Electron $\Rightarrow$ Optoelectronics

- Optoelectronics in the Information Technology
- Optoelectronic Devices
- Optoelectronic Materials
Optoelectronics in the Information Technology

1. Optical Data Storage:
   CD players, DVD players

2. Communications
   • Fiber Optic telecommunications
   • Plastic fiber communication (local area network, or LAN)
   • Chip-to-chip, board-to-board) interconnect (Internet servers)
   • Wireless communications (handset screen LCD and its backlighting)

3. Printing and Desktop Publishing
   Laser Printers, color copiers, etc.
4. Guidance and Control:
   Laser guided weapons and unmanned flying crafts (military use)

5. Imaging/Display/Illumination
   • Digital video camera
   • Night vision (military use)
   • Display/Lighting
   • Traffic lights & Automotive (~ 1000 LEDs are used in a single luxurious car alone!).

6. Health Care/Environment/Consumers
   • Painless diagnose, Painless physical therapy
   • Remote sensing, pollution monitoring
   • Solar cells, Bar scanners, pointers, etc.
Optoelectronic Devices

- Light Emitting Diodes (LEDs)
- Laser Diodes (Semiconductor Lasers)
- Photodetectors & Solar Cells
- Modulators
- Organic Display Devices (Liquid Crystal Display or LCD, LEDs and Organic LEDs, etc.)
Optoelectronic Materials

• Semiconductors

• Organic materials (polymers)
Job Prospects for Students

Most students easily find jobs in optoelectronic companies and microelectronics, like:

- Agilent (formerly HP Singapore)
- 3M (Singapore)
- DenseLight (a Optoelectronics company started by NTU former professors)
- Chartered Semiconductor Manufacturer
- Teck Semiconductors
- Micron (Singapore)
- Institute of Microelectronics
- Institute of Materials Research and Engineering
- Data Storage Institute
- and so on
Studying Optoelectronics in SME/NTU

Scholarships: For undergraduate students standard scholarships are available. For more information, check http://www.ntu.edu.sg

For graduate students, standard NTU scholarships are available to every student.
Master student: S$1400/month
Ph. D. student: S$1500/month
Top-ups and other types of allowances/payments are also available to eligible students.
Contact Us

For undergraduate students, follow the normal procedures to contact NTU.

For graduate students, you are welcome to contact the academic staff, e.g., Dr. Yuan Shu at http://www.ntu.edu.sg/home/assyuan.