



# YALE UNIVERSITY COUNCIL OF ENGINEERING

*Bulletin No. 258*

*April 18, 1994*

## **Speakers:**

**Mon., April 18, 11:00 am, 107 Mason.** *Electrical Engineering Seminar:* "GaAs Optoelectronic Neuron Arrays for Optical Neural Networks," Dr. Annette Grot, California Institute of Technology, Pasadena, CA.

**Mon., April 18, 1:30 pm, Becton Faculty Lounge.** *Signal Processing/Communications Seminar:* "Array Processing and Forward Modeling Methods for the Analysis of Stiffened, Fluid-loaded Cylindrical Shells," Dr. Joe Bondaryk, MIT, Cambridge, MA.

**Mon., April 18, 1:30 pm, 107 Mason.** *Special Solid State Seminar:* "Electron-Hole Double Layers," Dr. Bruce Kane, AT&T Bell Laboratories.

**Mon., April 18, 4:00 pm, 107 Mason.** *Monday Evening Seminar:* "Superconducting Microbolometers for THz Radioastronomy," Peter Burke, Applied Physics Department.

**Wed., April 20, 2:30 pm, 107 Mason.** *Applied Mechanics Seminar:* "Experiments on Mixing Augmentation by Weak Shock Waves," Dr. Baki Cetegen, University of Connecticut, Storrs, CT.

**Thurs., April 21, 1:00 pm, 107 Mason.** *Special Condensed Matter Seminar:* "Single-Particle Relaxation In Random Magnetic Field," Dr. Eugene Altshuler, Weizmann Institute, Israel.

**Thurs., April 21, 3:00 pm, 107 Mason.** "Hydrocarbon Chain Growth in the Fischer-Tropsch Synthesis," Dr. Rostam J. Madon, Engelhard Corporation, Edison, NJ.

**Grad brochure faculty updates:** This week faculty members will receive a copy of their research description as it appeared in last year's graduate brochure. Please make your updates on the hard copy and return it to Elona Vaisnys, 235 Dunham.

**On designing mini motors:** Internal combustion engines, on the molecular level, convert chemical energy into mechanical motion by burning single molecules. Examples abound in biology, where the "fuel" is adenosine triphosphate (ATP), the basic energy-carrying molecule in cells. Two examples of "protein motors" are myosin, which slides past action filaments to produce muscle contraction, and kinesin, which transports ma-

terial in cells. The size of the kinesin motor is 12 nm, 50 times smaller than the smallest transistor.

No such motor has yet been manufactured, but Marcelo Magnasco (212/327-8542) of Rockefeller University and NEC Research Institute has developed a general framework for such motors. Magnasco's description paves the way for a fundamental, physics-based understanding of motor proteins and provides insights into designing artificial ones. *Physical Review Letters*, 4/18/94.

**Government gophers multiply:** The Census Bureau offers statistics, data on government finances, research papers and other data on-line. Point your gopher to [gopher.census.gov](http://gopher.census.gov).

The Senate has a combination gopher/ftp site providing legislation, reports and committee assignments. Connect to [gopher.senate.gov](http://gopher.senate.gov), or [ftp.senate.gov](http://ftp.senate.gov) *Chronicle of Higher Education*, 4/13/94, A 20.

## **Larger and smaller:**

- In the past three years typical laser power has increased by a factor of ten, while pulse size has shrunk by a factor of three. Practical devices can now generate 10-20 fsec pulses.

- *Motorola* and *PageNet* will offer a personal communications device that is smaller than a pack of cigarettes and can receive and replay 4 to 5 minutes of voice messages. *Atlanta Journal-Constitution*, 4/9/94, B2.

**Buy & sell on INTERNET:** *CommerceNet*, to be operational by September, is the first large-scale effort to transact business on the Internet. Fifty companies will offer products, services, and banking, and will expand to include brokerage and notary services.

*CommerceNet* has an initial investment of \$12 million with half of its funding to come from government. Private backers include Apple Computer, BankAmerica, Hewlett-Packard, Lockheed and Sun Microsystems. *WSJ*, 4/8/94, B2.

**Sigh:** Stanford University will receive \$25 million to create science fellowships, courtesy of William Hewlett and David Packard. *WSJ*, 4/7/94, B6.