

The Daily Northwestern

Vol. 113, No. 98

Monday, April 6, 1992

Evanston, Ill.

4 THE DAILY NORTHWESTERN

Zap!

Electrical engineering prof builds NU's first semiconductor laser

By PHIL CAMPBELL
Daily Staff Writer

The first semiconductor laser ever built at Northwestern was christened Friday morning as 25 researchers toasted electrical engineering Prof. Manijeh Razeghi for her "astounding" accomplishment.

The development comes just seven months after Razeghi came to NU from Europe. Recruited heavily by the university, Razeghi was given a \$6 million grant and laboratory rooms that were filled with dust and empty boxes when she first arrived.

"We started with nothing — zero," she said. "Seven months later we have the device."

Other universities and industries normally take four to five years to create the laser, she said.

The laser was built to modify a telecommunications system that Razeghi helped pioneer when she was still in Europe.

In the system, a laser sends a message through optic fibers at a specific wavelength. To maintain the strength of the transmission, special amplifiers need to be placed along the fiber's route.

Razeghi said her semiconductor laser acts as a pump to boost the strength of the original transmission. The laser fires through improved fibers, called erbium-doped single-mode fibers, which eliminate the need for amplifiers. She said the importance of the laser lies in the materials used.

Traditional materials, which include aluminum-based compounds, have a tendency to deteriorate over time. By using an indium-based compound instead, Razeghi can make more durable compounds and a longer-lasting laser.

"With this kind of material, it's possible to get a laser that's much more reliable," she said.

Amoco provided key components for the research and is beginning a joint venture with NU to explore uses for the laser. Razeghi said she built the laser for \$700,000, a lower cost than she anticipated. She saved money by receiving discount rates for materials from interested companies.

Lasers for high-definition televisions, bar-code readings and faster computers could be made from the new material composition, she said. And military applications could result from future research. Razeghi said tracking lasers could be used to follow aircraft, or a much more powerful laser could "eliminate" one.

Razeghi is anticipating rapid progress in research for the future. She predicted later accomplishments could help America in competing with European and Japanese telecommunications companies.

"We are doing the things needed to put the United States in front of other countries in making high quality (laser) devices."

— Daily staff writer Todd R. Wallack contributed to this report.