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NU Engineering: Kellogg of the '90s?

Funds infusion, infrastructure fad energize school

By ARSENIO OLOROSO JR.

In a ground-floor laboratory on Northwestern University's Evanston campus, Manijeh Razeghi, a world-renowned electrical engineering researcher, is building a semiconductor atom by atom.

Despite an explosion two weeks ago in her laboratory, she says she is well on her way to developing a new type of laser that can be used in

long-distance telecommunications using fiber optic cables.

Welcome to Northwestern University's Robert R. McCormick School of Engineering and Applied Science. Once a sleepy little school, NU's engineering programs are now engaged in a \$90-million head-to-toe rebuilding.

The objective: To gain the kind of national pre-eminence attained by other NU schools, such as the J. L. Kellogg Graduate School of Man-

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Researcher Surendra P. Shah, left, and Dean Jerome B. Cohen; Counting on a new infrastructure focus to boost NU's School of Engineering into the big leagues.



NU

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agement and Medill School of Journalism.

NU President Arnold R. Weber and Engineering School Dean Jerome B. Cohen admit that their 10-year task is daunting. Northwestern has one of the nation's smaller engineering programs, with an undergraduate enrollment of 1,322. By contrast, the state's engineering powerhouse—the University of Illinois at Urbana—has 5,531 undergrads.

NU's 130,000-square-foot engineering building is a dark and outdated labyrinth, built piecemeal over a 50-year period.

And yet, university officials and engineering professionals alike believe NU's goal may be reachable, though the McCormick school, in some departments, is ranked well below the top 20 engineering schools in the country, according to the latest college rankings by *U.S. News & World Report*.

But the timing of Northwestern's move couldn't be better.

The engineering school will benefit from a new federal law, the Intermodal Surface Transportation Act, signed by President Bush last December. That law will provide \$153 billion over the next six years to rebuild the nation's crumbling roads.

Of that amount, \$18 million has been earmarked for a unique Infrastructure Technology Institute to be established at Northwestern to speed the development and commercialization of new materials for use in renovating the nation's transportation arteries.

As part of a universitywide strategic plan dubbed "A Framework for Distinction," the McCormick school also intends to reach the top rank of engineering schools by leveraging nationally renowned strengths in materials science and biomedical engineering with closer ties to industry, and by adding to its image as a leading educator of women and minority engineers.

Engineering elite

For now, "Northwestern is not regarded as being in the engineering elites in the way MIT (Massachusetts Institute of Technology) and Cal Tech (California Institute of Technology) are viewed as leading institutions," says Richard Ellis, director of manpower studies at the Washington, D.C.-based American Assn. of Engineering Societies.

But, he adds, McCormick's quest to reach the top "is probably something they could do. They're within shooting range."

The stakes are considerable. Northwestern wants to capitalize on a renewed national focus on science and technology that some estimate will call for the education of more than 60,000 new engineers annually toward the end of the decade.

In addition, McCormick wants to grab a larger share of federal research dollars, which totaled \$9.19 billion in 1991, according to the National Science Foundation (NSF).

Chicago corporations, feeling the heat of foreign competition, also have a stake in Northwestern's success.

"We have a strong corporate interest in seeing (McCormick) recruit the kind of student we want in our industry," says Northwestern trustee H. Laurence Fuller, president of Chicago-based Amoco Corp. Amoco is a major donor to

the engineering school's \$90-million capital campaign, of which \$70 million has already been raised.

For its part, McCormick is working on closer links with industry. One example of those closer working relationships is Mr. Razeghi's research to develop more powerful lasers.

Thanks to partial funding by Amoco, Boston-based semiconductor components-maker Kopyn Corp. and her former company, France-based Thomson-CSF, Ms. Razeghi has been able to set up an elaborate laboratory in what was an unused lab six months ago.

Another example is Surendra P. Shah's research at the Center for Science and Technology of Advanced Cement-Based Materials, a research consortium established by the NSF and headed by NU's Mr. Shah.

The center is developing new kinds of concrete for use in rebuilding the nation's infrastructure. Collaborating with Material Service Corp. and the Skokie-based industry group Portland Cement Assn., the center has been developing a product that could very well be used to repair cracks in Chicago's leaking freight tunnels, a spray-on concrete 10 times stronger than existing concrete.

"We've approached the (Chicago Transit Authority) to see what they might need," says Mr. Shah, noting that Chicago's subway system also was waterlogged in the recent Chicago flood.

But he adds that Northwestern has even bigger plans for its materials science department through the new Infrastructure Technology Institute.

Also as part of a concerted thrust to cater to industry's needs, North-

western has established another unique program: McCormick and Kellogg award a joint degree, a master's of manufacturing management.

Concern for business new

McCormick, which, until renamed in 1990, was known as the Technological Institute has not always been as concerned about the business world. "They tended to educate their students and do their research without caring what corporations wanted," says Northwestern's President Weber.

The result: "These are parts of (McCormick) that have been mediocre," says Material Service Corp. Chairman Lester Crown, who co-chairs the school's capital campaign. "The intention is to bring those parts to world-class status."

McCormick has been making

steady progress. In the *U.S. News* rankings this year, Northwestern moved to 26th place from 49th in computer science, to 32nd from 40th in electrical engineering and to 20th from 25th in environmental engineering.

For students entering this coming fall, the school had reached an all-time-high number of applications—2,153—by February, 30% higher than last year.

McCormick still has a long way to go to catch up with national leaders like MIT or the U of I, which last year graduated 1,903 students, the largest number of new engineers from one school in the nation.

But, says Mr. Weber, "There's really no choice. We have some excellent programs that we would like to become top-drawer. Average isn't good enough."