

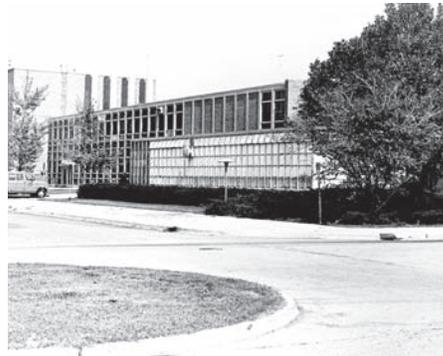
A Short Departmental History

The Department of Nuclear Engineering and Radiological Sciences at the University of Michigan is the oldest degree program and the second oldest department of its type in the country. In the late 1940s the Department of Aeronautical Engineering organized a graduate program for Air Force officers who came to the University for training. One of the courses offered was a course that began with introductory material in neutron-nuclear physics and included some material on reactor physics, such as diffusion theory and elementary criticality calculations. The course was first held on a classified basis, and was organized and taught by Larry Rauch and Myron Nichols.



In the early 1950s, when the material became available on an unclassified basis, it was decided to offer the course on a college-wide basis. Developing interest in nuclear energy led to the introduction of several additional courses including a Radiation Measurements course, taught in Electrical Engineering (Kerr), a course on Interaction of Radiation with Matter, taught in Electrical Engineering (Gomberg), and a course on Industrial Applications of Radiation taught in Chemical Engineering (Brownell).

Interest in the area grew to the point that an interdepartmental committee was appointed by the Dean of Engineering in 1952 to administer a graduate program in Nuclear Engineering. It was decided in the early 1950s to construct a research reactor, as part of the Michigan Memorial Phoenix Project (MMPP) established as a World War II memorial in 1948. The existence on campus of a program with the responsibility for developing peaceful uses of nuclear energy attracted additional attention and a significant number of graduate students to the Nuclear Engineering program. The Ford Nuclear Reactor (FNR), built with a \$1 million grant from the Ford Motor Company, reached initial criticality in 1957 and was the third university campus reactor constructed in the United States.



1957 - Ford Nuclear Reactor criticality reached

1958 - Department of Nuclear Engineering established

1965 - Undergraduate program in Nuclear Engineering established

1978 - Departmental and faculty offices move to Cooley Building

1977 - Major laboratories not located in PML transferred to shielded bays in Naval Architecture and Marine Engineering Building

1980 - Undergraduate program in Engineering Physics reinstated

1995 - Name change to Department of Nuclear Engineering and Radiological Sciences

2003 - Ford Nuclear Reactor shut down for decommissioning



The first Master's degree in Nuclear Engineering was awarded in 1954. The first three Ph.D. degrees (to M. Iriarte, T. Kammash, and F. Hammitt) were awarded at the spring commencement in 1958. By 1958 about 110 graduate students were enrolled, and about eight faculty members were associated with the program on at least a part-time basis: Gomberg, Kerr, King, Zweifel, E. Martin, Osborn, Brownell, and West.

In early 1958 the Engineering College and the University administration approved the formation of a Department of Nuclear Engineering, and it came into being officially on July 1, 1958. Henry Gomberg was appointed the inaugural Department Chairman.

The first student chapter of the American Nuclear Society was organized at the University of Michigan, and was officially chartered in December 1955. The Department initially offered only a graduate program, with degrees at the Masters, professional, and doctoral levels. It was a national leader in the establishment of Ph.D. programs in Nuclear Engineering and in Nuclear Science. In 1959, a tradition of long standing was begun by the administration of a "preliminary" examination for the incoming class of doctoral candidates (including Albrecht, Borcherts, Carpenter, Ferziger,



Knoll, Latta, Olhoeft, Plummer, Pluta, and Stevens).

In the Fall of 1965, the undergraduate program in Nuclear Engineering was established. The first B.S. degrees were awarded two years later. A second undergraduate program, in Engineering Physics, formerly Science Engineering, was reinstated in 1980 under the auspices of the Department of Nuclear Engineering. In the 1980s, teaching and research programs of the Department began to diversify significantly outside the traditional nuclear engineering areas, including plasma physics, materials science, radiation measurements, radiological health, and medical physics. In recognition of the program diversification, the Departmental name was changed in 1995 to the Department of Nuclear Engineering and Radiological Sciences.

Throughout its history, the Department has been housed on North Campus, close to the Phoenix Memorial Laboratory (PML) and the FNR. Initially, the Departmental office was located in the Automotive Laboratory, with faculty offices and laboratories also housed in the PML and the Fluids Laboratory (now G. G. Brown Laboratory). A major relocation took place in 1978 with the move of the Departmental office and most faculty offices to the Cooley Building. At the same time, major laboratories not located in the PML were transferred to the large shielded bays that formerly housed the Physics Department cyclotrons.



The Departmental research laboratories in the former cyclotron

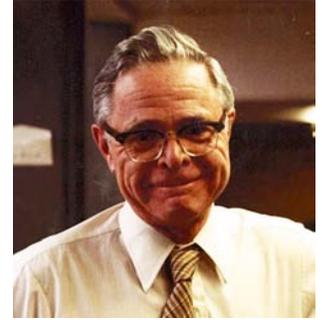


bays evolved into the Michigan Ion Beam Laboratory and the Plasma, Pulsed Power and Microwave Laboratory, occupying a large part of the Naval Architecture and Marine Engineering (NAME) Building. As a major University-wide facility, the FNR operated successfully between 1957 and 2003, when it was shut down for decommissioning. The Neutron Science Laboratory, featuring a D-T neutron generator with associated shielding facilities,

was added recently to the Departmental facilities in the NAME Building. NERS faculty members also play leadership roles in a number of University facilities, including the Center for Ultrafast Optical Sciences (CUOS) and the Electron Microbeam Analysis Laboratory (EMAL).

In addition to the current faculty, a number of individuals served on the departmental faculty. They include George West (died in 1970), Louis Hamilton (died in 1973), Lloyd Brownell (died in 1976), Edward A. Martin (died in 1985), Richard K. Osborn (died in 1987), Chihiro Kikuchi (died in 1988), Fred Hammitt (died in 1989), Milton Edlund (died in 1993), Henry Gomberg (died in 1995), George Summerfield (died in 1996), Fred Shure (died in 2000), John King (died in 2007), Geza Gyorey (retired from General Electric Company), Paul Zweifel (now at Virginia Tech), Harvey Graves (retired), Jack Carpenter (now at Argonne National Laboratory), David Bach (semi-retired at California State University, Northridge), M. M. R. Williams (now at Imperial College of Science, Technology and Medicine), Mary Brake (now at Eastern Michigan University), Rodney Ewing (now with the Geology Department with a joint position in NERS), and Donald Umstadter (now at the University of Nebraska). The department also has 4 adjunct faculty and 5 research scientists contributing to various instructional and research programs.

The Department has been headed by seven Chairs over its history: Henry Gomberg (1958-1961), William Kerr (1961-1974), John King (1974-1979), Glenn Knoll (1979-90), William Martin (1990-94, 2004-present), Gary Was (1994-1999), and John Lee (1999-2004). James Duderstadt, a member of the Departmental faculty, served as Dean of Engineering (1981-1986), Provost (1986-1988), and President (1988-1996).



In the half century of its history, the Department has awarded 726 B.S., 669 M.S., 35 MEng, 9 Professional Nuclear Engineer, and 492 Ph.D. degrees. In addition, the Department served as the home department for 189 B.S. graduates in Engineering Physics and Science Engineering. During the Fall 2008 semester, the Department has a total enrollment of 145 undergraduates,



including 25 Engineering Physics students, and 102 graduate students. The Department is consistently ranked first or second among all Nuclear degree programs in national academic surveys, including recent *U. S. News and World Report* surveys, both at the

undergraduate and graduate levels. As one indicator of excellence, students from the Department have won the Mark Mills Award of the American Nuclear Society 12 times out of the 49 selections that have been made to date.