Academic focus: Graduate study in dental materials science at New York University College of Dentistry

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INTRODUCTION

The field of Dental Materials Science today is a unique interdisciplinary blend of scientific and engineering aspects of materials used for operative, prosthetic, and other restorative or clinical applications in dentistry. In view of this interdisciplinary nature of the field, the graduate program at New York University College of Dentistry is designed to meet the needs of both dentists and scientists who wish to pursue a career in research and/or education in the field of materials used in dentistry. The current graduate program utilizes the faculty and facilities of the New York University College of Dentistry, Dept. of Dental Materials Science, and in addition, permits optional selection of courses from the Department of Physical and Engineering Metallurgy at the Polytechnic Institute of New York. Current research programs include: (1) alloy and amalgam development and characterization, (2) development of chemical and photo-initiated polymer system, (3) optimization of filler particle size and processing variables for composite restorative systems, (4) development of new dental ceramics, (5) research on adhesive and interfacial characteristics of powder-liquid dental cement systems, (6) synthetic apatite based bio-materials, (7) mineralized tissues studies, (8) casting and castability variables, (9) corrosion and tarish evaluation, and (10) acid etched direct bonding restorations.

The students enter the program with a variety of backgrounds and interests. Typically students with either a Bachelor of Science degree in physical and/or biological sciences or after training as a dentist are admitted. It is possible for the student to register for courses to make up deficiencies due to individual background. Students with scientific and clinical background are intereacted into the research programs so as to produce maximum interdisciplinary enrichment in the student's background.

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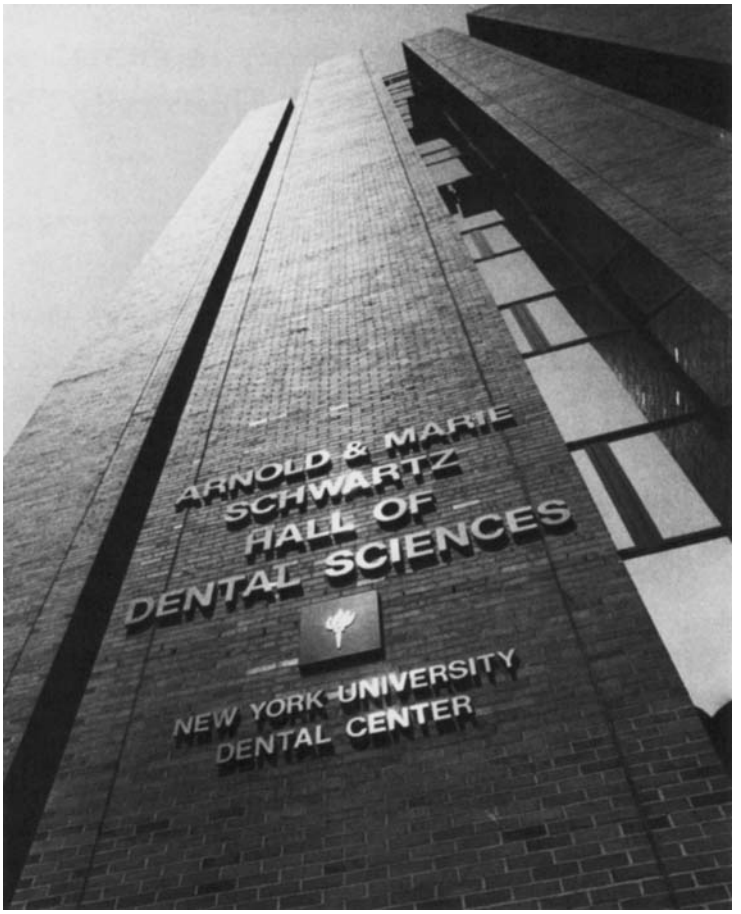

Figure 1. New York University, College of Dentistry building

The major attractions of the program

(1) Due to the cooperative effort of the Department of Dental Materials Science at New York University College of Dentistry with the Physical and Engineering Metallurgy Department of Polytechnic Institute of New York, the program stipulates a core curriculum of required courses at New York University and a selection of additional courses from a list of optional subjects both at New York University College of Dentistry and Polytechnic Institute of New York. This permits selection of courses complementing a wide range of individual backgrounds.

(2) The research facilities of both the Department of Dental Materials Science at New York University College of Dentistry and Physical and Engineering Metallurgy Department of Polytechnic Institute of New York are available to the student.

Figure 2. From left to right (standing) John P. Nielsen, T.K. Vaidyanathan, Allan Schulman, Mitchell Pines, and John P. LeGeros (sitting) Jayalakshmi Vaidyanathan, Racquel LeGeros, and Milagros Smyth

FACULTY

The program presently has three full time and four adjunct faculty members at New York University College of Dentistry and additional support from the entire faculty and staff of the Physical Engineering and Metallurgy Department at Polytechnic Institute of New York. The following is a listing of the faculty and their research interests at New York University:

Allan Schulman, *D.D.S., M.S., Professor and Chairman*

Castability of dental alloys, acid etched direct bonding restorations, apatitic restorative materials

Racquel LeGeros, *Ph.D., Professor*

Mineralized Tissues, synthetic apatite and development of calcium phosphate based biomaterials.

Tritala K. Vaidyanathan, *Ph.D., Associate Professor*

Development of dental alloys and amalgams, corrosion, castability, acid etched direct bonding restorations.

John P. Nielsen, *Ph.D., Professor Emeritus*

Fundamental studies on casting technology and castability, metals and alloys, tarnish

Jayalakshmi Vaidyanathan, *Ph.D., Adjunct Associate Professor*
Dental cements, polymeric materials, composite restoratives
John P. LeGeros, *Ph.D., Adjunct Associate Professor*
X-ray diffraction, crystallography
Milagros Smyth, *Ph.D., Associate Research Professor*
Development and characterization of ceramics
Mitchell S. Pines, *D.D.S., Clinical Associate Professor*
Castability, mercury monitor.

Faculty and graduate students participate in the annual scientific meetings of the International Association of Dental Research, the Society for Biomaterials and International Biomaterials Symposium, Metallurgical Society of AIME, and American Ceramic Society. The departmental research is generally published in several journals including the *Journal of Dental Research, Journal of Prosthetic Dentistry, Journal of Biomedical Materials Research,* and the *Journal of American Dental Association.*

GRADUATE PROGRAMS OFFERED

Currently the M.S. degree is offered through the graduate school of Arts and Science. Detailed requirements for the degree are included in the bulletin of the graduate school. The M.S. degree usually requires 1 to $1^1/_2$ years of full time or equivalent part time study.

Individual postdoctoral research opportunities are available for suitably trained doctoral graduates in science or dental graduates. Past individual trainees have used individual post doctoral fellowships under the National Research Service Awards of the NIDR.

ADMISSION PROCEDURE

Candidates for admission to the M.S. degree program must hold a D.D.S. or a Bachelor degree in engineering, physical, or biological sciences. The graduate bulletin and formal applications for graduate school admission can be obtained from the Office of Admissions, 5 Washington Square North, New York, NY 10003.

Additional details on the courses and/or research can be obtained by writing directly to the department chairman.