GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION
SPONSORED PROJECT INITIATION

Date: 6/29/79

Project Title: *Graduate Postdoctoral Training in Dental Materials*

Project No: *E-19-578* Green card

Project Director: *Dr. R. F. Hochman*

Sponsor: *DHEW/PHS/National Institute of Dental Research*

Agreement Period: From *7/1/79* Until *6/30/80**
**04 year, overall grant period 7/1/76 - 6/30/81*

Type Agreement: *Training Grant No.* 5 T32 DEO 7053-04

Amount: *$81,114*

Reports Required: *Interim Progress Report, Terminal Progress Report*

Sponsor Contact Person (s):

Technical Matters

*Thomas Valega, Ph.D.*
*Chief, Restorative Materials*
*Program Branch*
*Extramural Programs, NIDR*
*Public Health Service*
*Department of Health Education and Welfare*
*Bethesda, Maryland 20014*
*(301) 496-7492*

Contractual Matters
(thru OCA)

*Robert Ginsburg*
*Grants Management Office*
*National Institute of Dental Research*
*Public Health Service*
*Dept. of Health Education & Welfare*
*Bethesda, Maryland 20014*
*(301) 496-7434*

Defense Priority Rating: *NA*

Assigned to: *Chemical Engineering* (School/Laboratory)

COPIES TO:

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Project Code (GTRI)
Other_____

GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION

# SPONSORED PROJECT TERMINATION

Date: June 10, 1980

Project Title: Graduate Postdoctoral Training in Dental Materials

Project No: E-19-578

Project Director: Dr. R. F. Hochman

Sponsor: DHEW/PHS/National Institute of Dental Research

Effective Termination Date: 6/30/80

Clearance of Accounting Charges: 6/30/80

Grant/Contract Closeout Actions Remaining:

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_ Final Invoice and Closing Documents
x ~~Final~~ Fiscal Report (Interim)
x Final Report of Inventions Interim)
_ Govt. Property Inventory & Related Certificate
_ Classified Material Certificate
_ Other _____

CONTINUED BY E-19-587

Assigned to: Chemical Engineering (School/~~Laboratory~~)

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Project Code (GTRI)
Other OCA Research Property Coord.

CA–4 (1/79)

| SECTION IV SUMMARY PROGRESS REPORT | NUMBER DE 07053-04 | |
|---|---|---|
| PROGRAM DIRECTOR (Last, First, Initial) | PERIOD COVERED BY THIS REPORT | |
| Hochman, Robert F. | FROM | THROUGH |
| NAME OF ORGANIZATION | | |
| Georgia Institute of Technology | 7/1/79 | 6/30/80 |

TITLE OF PROGRAM (Repeat title shown in item 1 on first page)

Graduate-Postdoctoral Training in Dental Materials

1. Describe accomplishments since last report. Describe the significance of any changes in the direction taken by the program during this period.
2. Publications pending or published and not previously reported? ☐ No ☒ Yes If "Yes," list below.
3. Foreign travel undertaken during the above period? ☒ No ☐ Yes If "Yes," describe below.

I. PROGRAM ACCOMPLISHMENTS

A. Trainees

We have reached a level of essentially full-trainee participation on the grant. Ms. Cheryl Espy is now a full-time predoctoral student and with the addition of Mr. Larry Rodgers our predoctoral allotment is full. This year's program has basically seen the completion of programs for Dr. Kirt Bundy and Dr. Forest Butler plus training for Dr. Steven Reese, Dr. Pathik Soni (resident) and Dr. Chung Kung (resident). In summary, brief descriptions of the trainees on the program and their training areas are described in the following:

Predoctoral

Mrs. Cheryl H. Espy. Mrs. Espy is continuing her work towards a Master of Science Degree in Metallurgy with emphasis on dental materials. Mrs. Epsy's work has proceeded to the point where she has completed the major portion of her masters courses, and is presently getting underway in her graduate thesis research. She has completed literature survey and preliminary studies on ion-implantation as well as the evaluation of corrosion characteristics of certain types of dental amalgams tested in vivo and in vitro. Mrs. Espy is broadening her background with biological background courses in addtion to the physical science studies.

Mr. Larry B. Rodgers. Mr. Rodgers received his Bachelor of Science Degree from the University of Georgia and has initiated his research and training on this grant towards a Master of Science Degree. Mr. Rodgers' studies are presently divided half-time as a trainee here at Georgia Tech and the balance of his time is spent at Emory working with Dr. Ames in the dental materials area. This provides him with an indept dental orientation as well as background in clinical dental research. He plans to pursue his studies full-time on this program within the next two to three quarters. He has initiated some preliminary studies in the corrosion of dental amalgams and substitute materials for precious alloys.

Postdoctoral

Dr. Kirt J. Bundy--Ph.D. Materials. Dr. Bundy has completed his training and as of September. 1979 has held a full-time staff position as Assistant Professor of Biomaterials at Johns Hopkins University. There, he is pursuing academic teaching as well as initiating his own dental and bio-materials research studies.

Dr. Forest M. Butler--D.D.S. Dr. Butler in conjunction with the project director and Dr. Bundy performed a study of the effects of various metals on certain caries' type bacteria. This is a preliminary study of a combination of biological and materials research in which an indepth evaluation of the relation of the material in the solution to the biological effects were taken into account. Although there is some discussion of its merit in microbiological areas, it is quite evident that the results of these studies show what the materials with high free ion-concentrations and other oxide formers, etc. do. The free ion

type appears to have the greatest toxicity. Further studies must be performed in this area, but this initial study representing for the first true evaluation of material in relation to biological effects in this area.

Dr. Steven B. Reese--D.D.S. Dr. Reese was a practicing dentist for eight years and has now successfully returned to the academic life and is doing excellent work. He has completed a major part of the academic background as of this quarter and is now well into graduate studies. He is presently evaluating a number of areas for potential these studies, including further indept evaluation of the corrosion characteristics of non-precious alloys and the corrosion characteristics of dental amalgams. It is hoped that Dr. Reese will soon have the opportunity to visit Dr. Ryge and his staff in relation to their clinical research program on amalgam corrosion.

Dr. Pathik M. Soni--D.D.S. Dr. Soni is an American immigrant and has been in this country for some time both at the University of Michigan and the University of Northwestern. Dr. Soni is presently pursuing a greater indepth study in the materials area and is taking courses in x-ray diffraction, electron-microscopy and various other advanced physical metallurgy, plus courses in polymer and ceramics. Dr. Soni has been working in conjunction with Mr. Danny Averette and Dr. Marek's program in developing better techniques for metallurgraphic study of amalgam, particularly metallurgraphic evaluation of corroded samples.

Dr. Chung Yuan Kung--Ph.D. Dr. Kung joined our staff basically to initiate characteristics of fatigue fracture and dental-medical materials. These studies are particularly directed towards the evaluation of titanium, cast and wrought and its application to dental uses. Particular studies are dealing with the most logical alloy Ti-6Al-4V. This alloy is particularly good resistance in a saline environment.

B. Program Highlights (07-01-79 to 06-30-80) (Including presentation and publications

1. Dr. Kirk J. Bundy completed his postdoctoral training and accepted a position as Assistant Professor of Biomaterials at Johns Hopkins University.

2. Dr. Robert F. Hochman, Dr. Marek and Dr. K. J. Bundy had a paper accepted for the International Conference on Biomaterials to be be held at Clemson University on April 28 to May 1, 1979.

3. Dr. F. M. Butler had his preliminary M.S. thesis proposal accepted on August 1, 1978. The tentative thesis title is "Bacteriostasis Effects of Corrosion Products From Metals Application to Dental Materials for the Purpose of Decay Prevention."

4. Dr. R. F. Hochman presented an invited seminar at Johns Hopkins University on December 5, 1978.

5. Dr. M. Marek the Assistant Director of the program completed a joint research study with Dr. David B. Mahler of the University of Organ. This study will be presented at the March IADR meeting in New Orleans.

6. Dr. Hochman, Dr. Bundy and Dr. Butler completed a study to be presented at the March IADR meeting in New Orleans.

7. Three trainees attended the 1978 IADR meeting in Washington, D.C.

II. CONTINUATION PROGRAM

The basic objectives of the program will be to continue to enhance the in-depth training in materials for the trainees involved, both academically and in basic dental materials research. One replacement postdoctoral trainee will be sought to replace Dr. Forest Butler who will complete his training in the period. The training program will continues to follow the objectives and directions as outlined in part two of this application.

III. PROGRAM DIRECTOR'S ASSURANCE

"The undersigned agrees to accept responsibility for the scientific and technical conduct of the project and for provision of required progress reports if a grant is awarded as the result of this application."

| | |
|---|---|
| Date | Program Director |