MEMORANDUM

TO: Nariman Farvardin  
    Dean, A. James Clark School of Engineering

FROM: Victor Korenman  
      Associate Provost for Academic Planning and Programs

SUBJECT: Proposal to Change the Name of the Department of Chemical Engineering to the Department of Chemical and Biomolecular Engineering (PCC Log No. 04048)

Chancellor Kirwan has approved changing the name of the Department of Chemical Engineering to the Department of Chemical and Biomolecular Engineering. Enclosed is a copy of the letter from the Chancellor and a copy of the approved proposal.

The change is formally effective April 15, 2005.

VK: sfm
Enclosure

Cc: Dr. Sylvester J. Gates, Chair, Senate PCC  
    Ms. Sarah Bauder, Student Financial Aid  
    Dr. Mary Giles, University Senate  
    Ms. Barbara Hope, Data Administration  
    Ms. Trudy Lindsey, Graduate Studies  
    Dr. Phyllis Peres, Undergraduate Studies  
    Dr. Gary Pertner, A. James Clark School of Engineering  
    Ms. Anne Turkos, Archives  
    Dr. Linda Yokoi, Records & Registrations
April 15, 2005

Dr. C.D. Mote, Jr.
1101 Main Administration Building
University of Maryland, College Park
College Park, MD 20742

Dear Dan:

Thank you for forwarding the request from University of Maryland, College Park to change the name of the Department of Chemical Engineering to the Department of Chemical and Biomolecular Engineering. I am delighted to approve this change. Please express my appreciation to departmental faculty for their careful work in planning for this change.

Sincerely,

William E. Kirwan
Chancellor

cc:  Dr. Irwin Goldstein
     Dr. Gertrude Eaton
     Dr. William Destler
     Dr. Victor Korenman
April 4, 2005

Chancellor William E. Kirwan
University System of Maryland
Elkins Building

Dear Chancellor Kirwan:

The A. James Clark School of Engineering has proposed that the name of its Department of Chemical Engineering be changed to the Department of Chemical and Biomolecular Engineering. The proposed name would better reflect the educational mission of the Department, and especially the research activities of its faculty and students.

The proposal has been endorsed by all of the appropriate faculty and administrative committees concerned and was approved by the College Park Senate at its meeting on April 4, 2005.

I accept this recommendation and ask that you approve the change in name of the Department of Chemical Engineering to the Department of Chemical and Biomolecular Engineering.

Yours sincerely,

[Signature]
C. D. Mote, Jr.
President

CDM/vk
cc: William W. Destler, Senior Vice President for Academic Affairs and Provost
    Nariman Farvardin, Dean, A. James Clark School of Engineering
    Arthur N. Popper, Chair, University Senate
THE UNIVERSITY OF MARYLAND, COLLEGE PARK
PROGRAM/CURRICULUM PROPOSAL

DIRECTIONS: Provide one form with original approval signatures in lines 1 - 4 for each proposed action. Keep this form to one-page in length. Forms and appropriate attachments should be submitted to the Office of Academic Affairs, who will assign a Log Number to each proposal. Also submit an electronic version of as much of the proposal as is possible.

DATE SUBMITTED December 10, 2004

COLLEGE/SCHOOL Clark School of Engineering

DEPARTMENT/PROGRAM Department of Chemical Engineering

PROPOSED ACTION (A separate form for each) ADD ___ DELETE ___ CHANGE ___ X ___

DESCRIPTION (Provide a succinct account of the proposed action. Details should be provided in an attachment. Provide old and new sample programs for curriculum changes.)

The department proposes to change its name to the Department of Chemical and Biomolecular Engineering. This action was approved by the department's faculty assembly by a vote of 14 yes, 0 no, and 1 abstention on December 2, 2004. The new department name better describes the educational mission of the department, including the research activities of its faculty.

JUSTIFICATION/REASONS/RESOURCES (Briefly explain the reason for the proposed action. Identify the source of new resources that may be required. Details should be provided in an attachment.)

Since 2002, 22 chemical engineering departments nationwide have added either "biomolecular" or "biological" to their official names (see attached list) to emphasize the increasing importance of molecular biology, in addition to chemistry, as a fundamental science underpinning this engineering discipline. In effect, it reflects the fact that biology has evolved into a molecular science and that chemical engineering paradigms apply to both chemical and biomolecular systems. In addition, the name change will bring national recognition to a department that has been demonstrating excellence at the interface between engineering and molecular biology for many years. No new resources are required.

APPROVAL SIGNATURES

1. Department Committee Chair
   Signature: [Signature]
   Date: 12/10/04

2. Department Chair
   Signature: [Signature]
   Date: 12/10/04

3. College/School PCC Chair
   Signature: [Signature]
   Date: 1/31/05

4. Dean
   Signature: [Signature]
   Date: 2/2/05

5. Dean of the Graduate School (if required)
   Signature: [Signature]
   Date: 3/15/05

6. Chair, Senate PCC
   Signature: [Signature]
   Date: 3/15/05

7. Chair of Senate
   Signature: [Signature]
   Date: 4/14/05

8. Vice President for Academic Affairs & Provost
   Signature: [Signature]
   Date: 4/15/05
Material Supporting the Proposal to Change the Name of the Chemical Engineering Department to the Department of Chemical and Biomolecular Engineering

1. Recent (2002- ) Bio-Related Name Changes: Chemical and ________ Engineering
2. Pre-2002 Bio-Related Names: Chemical and ________ Engineering
3. University of Maryland Department of Chemical Engineering: Representative Biomolecular Engineering Related Research
4. Stated Research Interests of Students Applying to the Chemical Engineering Graduate Program
5. University of Maryland Department of Chemical Engineering Faculty Participating in the Bioengineering Graduate Program
6. University of Maryland Molecular and Cellular Bioengineering Research Experiences for Undergraduates (REU) Program
7. The Bioprocess Scale-Up Facility
8. Minimizing Potential Conflict with other Department and Program Names
### 1. Recent (2002-) Bio-Related Name Changes: Chemical and ________ Engineering

<table>
<thead>
<tr>
<th>University (US News rank)</th>
<th>Name</th>
<th>Other “Bio” related engineering departments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>Biological</td>
<td>none</td>
</tr>
<tr>
<td>Cleveland State</td>
<td>Biomedical</td>
<td>none</td>
</tr>
<tr>
<td>Colorado-Boulder (18)</td>
<td>Biological</td>
<td>none</td>
</tr>
<tr>
<td>Cornell (18)</td>
<td>Biomolecular</td>
<td>Biological and Environmental</td>
</tr>
<tr>
<td>Drexel</td>
<td>Biological</td>
<td>Biomedical</td>
</tr>
<tr>
<td>Florida State</td>
<td>Biomedical</td>
<td>none</td>
</tr>
<tr>
<td>Georgia Tech (13)</td>
<td>Biomolecular</td>
<td>Biomedical</td>
</tr>
<tr>
<td>Illinois (9)</td>
<td>Biomolecular</td>
<td>Agricultural</td>
</tr>
<tr>
<td>Johns Hopkins (29)</td>
<td>Biomolecular</td>
<td>Biomedical</td>
</tr>
<tr>
<td>Missouri-Rolla</td>
<td>Biological</td>
<td>none</td>
</tr>
<tr>
<td>Montana State</td>
<td>Biological</td>
<td>none</td>
</tr>
<tr>
<td>North Carolina State (20)</td>
<td>Biomolecular</td>
<td>(1) Biological &amp; Agricultural; (2) Biomedical</td>
</tr>
<tr>
<td>Northwestern (13)</td>
<td>Biological</td>
<td>Biomedical</td>
</tr>
<tr>
<td>Notre Dame (22)</td>
<td>Biomolecular</td>
<td>none</td>
</tr>
<tr>
<td>Ohio State (34)</td>
<td>Biomolecular</td>
<td>(1) Food, Ag and Biological; (2) Biomedical</td>
</tr>
<tr>
<td>Oklahoma (56)</td>
<td>Biological and Materials</td>
<td>Bioengineering Center</td>
</tr>
<tr>
<td>Penn (16)</td>
<td>Biomolecular</td>
<td>Biomedical</td>
</tr>
<tr>
<td>Polytechnic</td>
<td>Biological</td>
<td>none</td>
</tr>
<tr>
<td>RPI (29)</td>
<td>Biological</td>
<td>Biomedical</td>
</tr>
<tr>
<td>Stevens Inst. of Tech</td>
<td>Biochemical and Materials</td>
<td>none</td>
</tr>
<tr>
<td>SUNY-Buffalo (42)</td>
<td>Biological</td>
<td>none</td>
</tr>
<tr>
<td>Syracuse (order reversed)</td>
<td>Biomedical</td>
<td>none</td>
</tr>
<tr>
<td>Tufts</td>
<td>Biological</td>
<td>Biomedical</td>
</tr>
<tr>
<td>Tulane</td>
<td>Biomolecular</td>
<td>Biomedical</td>
</tr>
<tr>
<td>Washington State</td>
<td>Bioengineering</td>
<td>Biological Systems</td>
</tr>
<tr>
<td>Wisconsin* (5)</td>
<td>Biological</td>
<td>(1) Biological Systems; (2) Biomedical</td>
</tr>
</tbody>
</table>

### 2. Pre-2002 Bio-Related Names: Chemical and ________ Engineering

<table>
<thead>
<tr>
<th>University (US News rank)</th>
<th>Name</th>
<th>Other “Bio” related engineering departments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Christian Brothers</td>
<td>Biochemical</td>
<td>none</td>
</tr>
<tr>
<td>Rutgers (42)</td>
<td>Biochemical</td>
<td>(1) Biomedical; (2) Bioresource</td>
</tr>
<tr>
<td>Iowa (50)</td>
<td>Biochemical</td>
<td>Biomedical</td>
</tr>
<tr>
<td>UMBC</td>
<td>Biochemical</td>
<td>none</td>
</tr>
</tbody>
</table>

**Tally**

- Chemical and Biological: 13
- Chemical and Biomolecular: 9
- Chemical and Biochemical: 4
- Chemical and Bioengineering: 1
- Chemical and Biomedical**: 4

*Only university to use “biological” in two department names

**Smaller engineering colleges consolidating degree programs administratively. Most large engineering colleges maintain separate biomedical (or bioengineering) departments.
3. University of Maryland Department of Chemical Engineering: Representative Biomolecular Engineering Related Research

Professor Timothy A. Barbari
- Biomolecular Engineering of Mammalian Cells for Encapsulation and Transplantation Chong Yung (Ph.D.student)
- Development of Smart Membranes for Biomolecular Detection Sufi Ahmed (post-doctoral research associate)
- 2004-05 Grant Activity:
  o MIPS - "Next Generation Membranes for Biomolecular Detection"
  o NIH(STTR) - "Smart Membranes for Biomolecular Detection"
  o NSF - "REU Site: Molecular and Cellular Bioengineering"

Professor William E. Bentley
- Karen Carter, Chem Eng PhD student
- Chi-Wei Hung, Chem Eng PhD student
- Angela Lewandowski, Chem Eng PhD student
- Jun Li, Chem Eng PhD student
- John March, Chem Eng PhD student
- David Small, Chem Eng PhD student
- Chen-Yu Tsao, Chem Eng PhD student
- Recent Grant Activity:
  o National Science Foundation, Metabolic Engineering of Monoxygenases for 1-Naphthol and Styrene Epoxide Formation (TSE01-D), $639,049, BES-0124401, 3-1-02 to 2-28-05, (with Dr. Thomas K. Wood, University of Connecticut).
  o National Science Foundation, REU Site: Molecular and Cellular Bioengineering $320,000, EEC-0139595, 6-1-02 to 5-31-2006, (with Dr. Timothy Barbari).
  o National Science Foundation, QSB: Metabolic Engineering of Quorum Circuitry - A Systems Approach, $500,858, BES-0222687, 7-1-02 to 6-31-05 (w/ Dr. E. Zafiriou).
  o Environmental Protection Agency, Microarray Analysis for Evaluating Genotoxicology and Cell Signaling 6/9/03-6/08/04, $75,000 01-T83100801
  o National Institutes of Health, NIGMS, Interagency Metabolic Engineering Program, RNA Interference as a Metabolic Engineering Tool: Potential for In vivo Control of Insect and Insect Cell-Based Systems, 2/1/04-1/31/07, $548,643, GM70851-01.
  o Environmental Protection Agency, DNA microarray training and education (DnaMITE) Program $90,000 per year.
  o USDA, Alternative Uses for Tobacco, $350,000 per year, $50,000 WEB portion.

Professor Panagiotis Dimitrakopoulos
- Mesoscale dynamics of biopolymers 20% of total research activity
- Dynamics of red and white blood cells 15% of total research activity
- Biofluid dynamics of endothelial cells in micro-vessels 15% of total research activity
- Development of novel efficient numerical techniques for the study of the physical problems above 20% of total research activity

Professor John P. Fisher
- Cell signaling within synthetic matrices 25% of total research activity
- Articular cartilage regeneration 25% of total research activity
- Orbital bone regeneration (a collaboration with the University of Maryland Dental School) 25% of total research activity
- Abdominal wall repair (a collaboration with the University of Maryland Medical School) 25% of total research activity
Professor Sandra C. Greer
• Thermodynamics and structure of the polymerization of the protein actin 25% of total research activity

Professor Maria Klapa
• Time series transcriptional profiling analysis of the Arabidopsis Thaliana using full genome DNA microarray and metabolic information Baskar Dutta, Chem Eng PhD student
• High-throughput time-series metabolic analysis of a systematically perturbed plant system Harin Kanani, Chem Eng PhD student

Professor Peter Kofinas
• Virus Recognition Using Antibody Sensor Arrays on Self-Assembled Nanoscale Block Copolymer Patterns United States Department of Agriculture 01/05-12/06 $157,000 (100% share, sole PI)
• Virus Recognition Using Self-Assembled Nanoscale Block Copolymer Patterns National Science Foundation 09/03-08/05 $104,999 (100% share, sole PI)
• Isomeric Sugar Recognition Using Molecularly Imprinted Polymer Hydrogels National Science Foundation 04/03 - 03/06 $268,721 (100% share, sole PI)
• Toxic and Nutrient Pollution Prevention Using Anion Binding Polymer Hydrogels National Science Foundation 09/01 - 08/05 $238,250 (100% share, sole PI)

Professor Evanghelos Zafiriou
• Metabolic Engineering of Quorum Circuitry: A Systems Approach Supported by NSF grant through the Quantitative Systems Biology initiative; 50% of total research effort supporting Xin Fang, ChE PhD student

4. Stated Research Interests of Students Applying to the Chemical Engineering Graduate Program

45 of the 140 applicants to the Fall 2005 Chemical Engineering graduate program listed biotechnology and metabolic engineering as their primary research interests; of the 16 US applicants, 10 listed bio-related research as their primary interest. These numbers are representative of those seen in the graduate program during the last several years.

5. University of Maryland Department of Chemical Engineering Faculty Participating in the Bioengineering Graduate Program

The Chemical Engineering Department currently has 16 faculty; of those, the following participate (or direct) the Bioengineering Graduate Program (www.bioe.umd.edu) in the Clark School of Engineering:

1. Timothy Barbari
2. William Bentley (Bioengineering Program Director)
3. Richard Calabrese
4. Panagiotis Dimitrakopoulos
5. Sheryl Ehrman
6. John Fisher
7. Sandra Greer
8. Maria Klapa
9. Peter Kofinas
10. Srinivasa Raghavan
11. Nam Sun Wang
12. Evanghelos Zafiriou (pending)
6. University of Maryland Molecular and Cellular Bioengineering Research Experiences for Undergraduates (REU) Program

The research focus of this REU program, molecular and cellular bioengineering, involves a number of faculty members in the Department of Chemical Engineering, as well as others in Materials Science, Bioengineering, Mechanical Engineering, Electrical Engineering, and the Center for Biosystems Research. Our proximity to the biotechnology industry of Maryland (increasingly known as "genomic junction") and the willingness of many of these companies to host visits to their facilities make this a unique REU program. The program PI is Professor Tim Barbari of the Chemical Engineering Department, was initiated in summer 2003, and now is in its third year. This REU program is administered by the Chemical Engineering Department.

The objective of this REU site is to introduce undergraduates from engineering and the sciences, especially students majoring in chemical engineering, bioengineering, chemistry, physics, and biology, to a diverse research environment involving bioengineering at the molecular and cellular level.

The three principal goals of this program are:
- to introduce a group of talented U.S. undergraduates to a diversified research program in molecular and cellular bioengineering;
- to promote team-based and cross-disciplinary research within this field;
- to expand the scholars' knowledge of emerging technologies and trends, preparing them for graduate studies or a professional career.

The REU site will focus on increasing the students' technical skills, critical thinking abilities, and presentation capabilities. REU scholars will work with full-time faculty, visiting scientists, post-doctoral research associates, graduate students, and other undergraduate students on research that promises to lead to important new discoveries and technologies. They will be exposed to state-of-the-art research, multidisciplinary research laboratories, research group meetings, and scientists/engineers from local industry and nearby research institutions (NIH, NIST, USDA, FDA, NRL). In addition, students will participate in non-technical seminars aimed at demystifying the graduate school process. Topics will include: "graduate studies in engineering and preparation for graduate student life"; and "choosing a career path". Also, in order to foster the connection between university research and industry, two industrial field trips per summer session will be provided to nearby biotechnology companies.

Finally, those students with outstanding credentials accepted in their sophomore year will be encouraged to continue in this REU program for two years.

The current list of project descriptions can be found at [www.enth.umd.edu/REU/projects.shtml](http://www.enth.umd.edu/REU/projects.shtml)
7. The Bioprocess Scale-Up Facility

The Bioprocess Scale-Up Facility (BSF), a modern bioprocessing laboratory housed in the Chemical Engineering Building, is dedicated to the development and scale-up of biotechnology products and processes. With more than 678 fermentations conducted since 1998 alone, the BSF has accelerated the R&D of local biotechnology leaders such as Human Genome Sciences, NIH and MedImmune, as well as growing Maryland start-ups such as Martek Biosciences and Digene Corporation.

The BSF’s capabilities include fermentation, cell culture, separation, purification, and product analysis. Numerous students (especially undergraduates) in the Chemical Engineering Department have made use of the BSF to study challenging problems in the areas of biopolymers, turbulence and multiphase fluid dynamics, biosensors, process analysis and control, and both metabolic and biochemical engineering.

More information on the BSF can be found at www.biotech.umd.edu/BSF.html

8. Minimizing Potential Conflict with Other Department and Program Names

In addition to accurately describing the research that takes place in our department, our faculty felt the choice of adding Biomolecular Engineering (versus Biological Engineering) would generate the minimum amount of confusion among students choosing between our program, Biological Resources Engineering and the Bioengineering graduate program in the Clark School. We also felt this name would also work any plans to develop a Bioengineering Department within the Clark School.

With this in mind, the department chairs of the Biological Resources Engineering, Chemistry and Biochemistry, Biology, and Cell Biology and Molecular Genetics were informed of our name change proposal; I have not heard back from the last two departments, the chair of the Biological Resources Engineering had no immediate concerns, and the chair of the Chemistry and Biochemistry Department provided a letter supporting the proposal.
Ray--None of my chairs have expressed concern, so you have a green light from us. Norma

On 3/8/05 1:33 PM, "adomaiti@isrmail.isr.umd.edu"
<adomaiti@isrmail.isr.umd.edu> wrote:

Dear Dean Allewell,

   Our department recently voted to change its name to the Department of Chemical and Biomolecular Engineering; this change reflects national trends in the chemical engineering profession as well as the nature of research taking place in our department. The name change proposal was approved by the Clark School of Engineering PCC and will be considered by the Academic Planning Advisory Committee next week.

   In addition to accurately describing the research taking place in our department, our faculty felt the choice of adding Biomolecular Engineering (versus Biological Engineering) would generate the minimum amount of confusion among students choosing between our program, Biological Resources Engineering and the Bioengineering graduate program in the Clark School. We also felt this name would work any plans to develop a Bioengineering Department within the Clark School.

   I've discussed our plans with the chairs of the Biological Resources Engineering Department and the Department of Chemistry and Biochemistry. Neither chair expressed any reservations regarding our proposal; I've also contacted the chairs of the Departments of Biology and Cell Biology and Molecular Genetics.

   My motivation for sending this note was to let you know about our plans and ask if you saw any potential sources of conflict between our proposal and the College of Life Sciences. I would be very happy to talk if you have any questions or concerns. --Ray

Ray Adomaitis
Associate Professor and Acting Chair
Department of Chemical Engineering, Institute for Systems Research
www.isr.umd.edu/~adomaiti
Professor Raymond Adomaiti, Acting Chair  
Department of Chemical Engineering  
University of Maryland  
College Park, MD 20742

Dear Ray;

I have just learned of your department's decision to change its name to the "Department of Chemical and Biomolecular Engineering." This is a welcome change. I am aware of these changes since the publication of the Amundson Report by the National Research Council in 1987. The name reflects the times and increasing national needs in bioengineering. The name that your department has selected, however, sets the department apart from others with a name that resonates with major initiatives planned today and foreseen in the future.

Best wishes,

[Signature]

Michael P. Doyle

MPD/ejc