

AEMB National Newsletter

*Alpha Eta Mu Beta
National Biomedical Engineering Honor Society*

2004-2006 National Officers

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From the National President Herbert Voigt

This year saw the University of Pennsylvania approved as our 21st Alpha Eta Mu Beta Chapter and their charter will be presented at the AEMB Annual Business Meeting on Thursday, October 12, from 12-2:00pm in the San Francisco Room during the BMES Annual Meeting. We have some very important business to conduct, including graduate student eligibility (see article elsewhere), so we hope to see representatives from all twenty-one chapters at the meeting.

We are pleased to have several sources of funding for travel awards for AEMB representatives to attend the BMES meeting in Chicago. The Coulter Foundation grant to BMES has allocated 10 travel awards and my own NSF REU grant has 15 travel awards, as well as thanks to Tom Harris and Jerry Collins, the VANth program has also allocated 20 travel awards for AEMB students. These travel awards are for \$500 each and applications must be received by September 19. We have enough awards that two representatives from each paid-up chapter should be able to attend the meeting. You should have received an email from Pat Horner regarding these awards but the application is included again in this newsletter.

Terri Murray and Brent Satterfield have put together another excellent Ethics Session on Friday morning, October 12, from 8:30-10:00am in the Truffles Room. They need volunteers for facilitators, see Terri's article.

The highlight of this year's AEMB activities will be the AEMB Luncheon on Friday, October 12, from 12-2:00pm, with Sue Van, president of the Wallace H. Coulter Foundation as this year's guest speaker. All faculty advisors and students should plan to attend this luncheon and bring your colleagues along as well.

I look forward to visiting with you again this at the BMES Annual Meeting, October 11-14, 2006, at the Hyatt Regency Chicago in Chicago, Illinois.

*Pat Horner's Remarks at our Third Annual AEMB Luncheon
September 30, 2005*

My Personal BME Journey

I began work in 1965 at the American Institute of Biological Sciences with the BioInstrumentation Advisory Council (BIAC) which was funded jointly by NASA and the Office of Naval Research to bring Technology utilization to the space program.

The BioInstrumentation Advisory Council had some of our early pioneers as members; in fact Otto Schmitt, the first BMES president, was a member and a world renowned physicist. He built one of the first digital computers using scraps that the University of Minnesota discarded. He also placed transmitters on several different animals and tracked their every move at a preserve at the University of Minnesota and I had the pleasure of seeing rooms full of tracking data.

Bill Cochran was also a member of the BIAC Council and I spent several nights tracking thrushes over hundreds of miles on their southern migration with the truck built by the Illinois Natural History survey. The thrushes would land at daybreak and they were caught and transmitters attached to a collar and when they took off at dusk, we tracked their movements through the night and in some instances across two states.

I visited with other members of the BIAC Council as well: Ken Norris in California was working with porpoises and killer whales; Stu Mackay wrote the first book on biotelemetry and we held several workshops with him across the country; and Howard Baldwin in his lab in Tucson tracking coyotes.

I was able to see one of the early space shots at Cape Kennedy and have breakfast with the astronauts and Verner von Braun. One of our technology utilization projects was to create a machine that would feed the monkey strapped in the space capsule; the biologists told engineers what they wanted and six months later the engineers built the better mousetrap, the only problem was that the food went over the monkey's head instead of in his mouth.

For the Office of Naval Research, we helped to develop the first co-axial cable from the island of Bimini to show the ocean floor at the National Aquarium in Washington, DC.

And then we founded the Alliance for Engineering in Medicine and Biology (AEMB). There existed a Joint Committee on Engineering in Medicine and Biology with representatives from several societies—the IEEE, ASME, AICHE, and the ISA that pooled their resources and each year conducted the Joint Conference on Engineering in Medicine and Biology (JCEMB). This group decided to create a new federation of organizations. It began with 20 societies, ten engineering and 10 medical, and we took over the JCEMB and it became the Annual Conference on Engineering in Medicine and Biology (ACEMB). Lester Goodman, then at the BioEngineering Instrumentation Branch (BEIB) at the National Institutes of Health (NIH), was the Founding President of this new organization. At his laboratory I was able to observe a calf with the first blood pump. They were having difficulty in these early days with the body rejecting materials for anything implantable and one evening as Lester was sitting at his kitchen table watching his wife wash her lingerie it occurred to him that spandex Lycra was pure and maybe he should try using it for the blood pump. It turned out that it only came by the train carload in liquid form, but he arranged with the company to send him a small supply and was able to patent the first blood pump. I also saw one of the first medical lasers used at NIH and a mouse milking machine.

Lester was my mentor in AEMB and then he moved to Medtronic where they were working on neuromuscular pulse stimulators. Alan Kahn was also at Medtronic and later became president of AEMB and he and Lester provided me with the prototype NeuroMod for my muscle spasms. I also visited Case Western Reserve University where Wen Ko was implanting pacemakers.

The AEMB Council enabled me to meet many

of the future leaders of the Biomedical Engineering Society (BMES): Art Johnson, currently Secretary of BMES, was also Treasurer & President of AEMB; Eric Guilbeau, Herb Lipowsky, Bob Plonsey, Morton Friedman, Larry Katz, Jack Linehan, John Lyman, and Peter Katona were all presidents of BMES; and Paul Hale with whom I also worked with in RESNA and now BMES. I was also present when BMES was founded in Atlantic City in 1968.

It was during this time that Dan Reneau, then Chair of the BME Department at Louisiana Tech (now President of Louisiana Tech) and Treasurer of AEMB, founded Alpha Eta Mu Beta, the National Biomedical Engineering Honor Society, and we provided the secretariat for the organization. Stan Napper was then the student representative to the AEMB Council and later the National Executive Director along with Paul as National President of AEMB. You will notice that is how we came up with Alpha Eta Mu Beta (AEMB) because the acronym matched the Alliance for Engineering in Medicine and Biology.

When I joined BMES, Herb Voigt suggested that we bring AEMB to BMES and there I was looking at the files from Stan Napper with certificates that still had my signature on from the late sixties. BMES began with AEMB in 1999 at the Atlanta meeting with ten chapters and we meet here today with twenty chapters.

Thanks to the Alliance for Engineering in Medicine and Biology, I was able to attend several International Conferences in Dresden, East Germany; in London; and two in Canada. National Science Foundation (NSF) funding also took me to Egypt for a 5-year program where we set-up an Ultrasound Center at Cairo University with two workshops each year in Cairo and post-workshop critiques in Luxor, Abu Simble, and Aswan; a 2-year program in Yugoslavia in Dubrovnik where the meetings were held in a palace overlooking the island of Locrum where Richard the Lion Hearted was washed ashore during the Crusades. The NSF funding was made possible with the assistance of Gil Devey and Lester Goodman, both of whom I consider among my mentors in Biomedical Engineering. I also provided

management, along with AAPM, for the World Congress on Medical Physics and Biomedical Engineering in 1988 in San Antonio with Bob Nerem as Chair.

I was able to meet Alan Carmack, Nobel Laureate for the CAT scan; Alvin Toffler, author of Future Shock; Michael DeBakey, the famous cardiac surgeon; the first bioengineer astronaut; Jarvik with Barney Clark's heart, and Les Geddes.

During my tenure with the Alliance I produced the first newsletter for EMBS and managed their first six meetings with the ACEMB before they decided to hold separate meetings. I also provided secretariat services for several Alliance member societies including the Society for Advanced Medical Systems, the Rehabilitation Engineering Society of North America, and the IEEE-EMBS.

And finally, NSF also funded the founding of the American Institute for Medical and Biological Engineering (AIMBE). Several workshops brought together the leaders working in biomedical engineering to decide the future of our field. The main focus was to create more funding for BME and AIMBE achieved that goal at the end of Clinton's presidency when he signed the legislation creating the newest institute at the National Institutes of Health—the National Institute of Biomedical Imaging and Bioengineering (NIBIB). The AEMB closed its doors and turned its assets and non-profit status over to AIMBE and I was one of the founders.

I served as Executive Director of the Rehabilitation Engineering Society of North America (now RESNA, Rehabilitation Engineering & Assistive Technology Society of North America) for 10 years and during that time we worked in areas such as standing wheelchairs, sip and puff systems for quads, parabikes for paraplegics, and talking computers. The Veterans Administration (VA) provided support along with the National Institute on Disability & Rehabilitation Research (NIDRR).

We helped to write the Americans with Disabilities Act (ADA) and the Technical Assistance Act (TAA) and worked on renovating hotels so they were accessible. I was elected an Honorary Fellow of RESNA At the same time as Senator Tom Harkin who

introduced the ADA & TAA legislation.

I also served as Executive Director of the Society for Advanced Medical Systems (SAMS) which later merged with the Society for Computer Medicine and subsequently became the American Medical Informatics Association (AMIA). SAMS had contracts with the Department of Labor to produce training materials for healthcare assistants for nursing homes. They were also involved with the problem-oriented medical record, artificial intelligence, and telemedicine. I am an Honorary Member of AMIA.

My last position was with the Society of Vascular Technology (SVT), now the Society of Vascular Ultrasound (SVU). They measure blood flow in veins and arteries and are involved with certification of vascular technologists and accreditation of vascular laboratories. It was at an SVT Board meeting that I discovered I had a tumor in my right kidney and subsequently lost it to cancer. SVT elected me an Honorary Member.

And now to the Biomedical Engineering Society (BMES): I knew Rita Schaffer, the BMES Executive Director, and we corresponded while I was Executive Director

of the Alliance for Engineering in Medicine & Biology and I also worked with Kay Lyou, BMES's first director, as well as John Lyman and Fred Weibel, on one of our ACEMB conferences. Eric Guilbeau called me as I was retiring from SVT and said that RITA had died and they wanted to move the BMES office to Washington. The Whitaker Foundation awarded a 5-year grant to expand and grow BMES. In fact, Herb Voigt, our AEMB National President, wrote the Whitaker proposal when he was BMES president-elect, and he has been one of my mentors in BMES, along with Herb Lipowsky and Eric Guilbeau. Paul Hale enabled us to achieve membership in ABET, the American Board for Engineering & Technology, to become the lead society for accreditation of U.S. Biomedical Engineering and Bioengineering programs.

It has been an enlightening journey, a challenge at times, a privilege to have worked with some amazing and talented people, and to have made a small contribution to the success of our biomedical engineering community.

I've loved every minute of it.

As I said in 1999 at my first BMES meeting, This is my home.

***AEMB Meetings
BMES 2006 Annual Fall Meeting
Hyatt Regency Chicago***

**Thursday, October 12, 2006
AEMB Annual Business Meeting, 12:00pm-2:00pm
San Francisco Room, Hyatt Regency Chicago**

**Friday, October 13, 2006
AEMB Ethics Session, 8:30am-10:00am
Truffles Room, Hyatt Regency Chicago**

**Friday, October 13, 2006
AEMB Annual Luncheon, 12:00pm-2:00pm
Truffles Room, Hyatt Regency Chicago
Guest Speaker, Sue Van
President, Wallace H. Coulter Foundation**

***Plan to attend these important meetings and
Don't forget to purchase a ticket for the AEMB Luncheon***

AEMB Students Lead Discussion on Ethical Issues

Terri Murray, Vice President AEMB & Co-chair AEMB Ethics Session

Biomedical engineers are involved in an ever increasing range of new products and technologies in the healthcare field designed to improve health and well-being. However, they can also create a range of ethical dilemmas, especially for novel products. For example, an implantable or wearable sensor can store and transmit personal health information that could save a person's life in a medical emergency. Unfortunately, it could also be accessed by insurance companies and identity thieves. A device that is meant to provide a person with better healthcare could also provide the means to harm that person. A classic example of what can happen when ethical concerns are not considered in product planning occurred several years ago when cochlear implants were developed and marketed to deaf people. The devices were perceived as a threat to deaf culture and an insult, implying that deaf people needed to be "fixed." This resulted in an intense backlash from the deaf community. As BME students, we are just a few years away from being part of the process that may lead to new technologies and we should train ourselves now to consider the ethical impact our designs may have and how build in a reasonable level of protection in our products.

In October 2004, Jerry Collins of the BMES Ethics Committee asked the officers and chapter representatives at the annual AEMB meeting to accept a leadership role in an ethics forum for students at the 2005 BMES meeting. He believed that AEMB would be an ideal student organization to plan and run the event. The officers and representatives agreed. Terri Murray and Brent Satterfield, Bioengineering graduate students in the Harrington Department of Bioengineering at Arizona State University (ASU) co-chaired the first session. They wished to let students identify concerns involving products and services that are relatively new or still in the planning stages,

and discuss options to ensure ethical treatment of patients. Brent and Terri refined the goals of the session to include practical experience in making recommendations to industry representatives that could affect the design of actual products and their use. The first AEMB Ethics Session was held in October 2005 and focused on the Digital Health initiative supported by both the healthcare industry and our government's executive branch. The second annual session is planned for October 13, 2006 at 8:30 am during this year's BMES Fall Meeting. Students will consider potential ethical issues and safeguards involving the potential for ubiquitous biosensors. The session abstract is on the Student Activity page of the BMES 2006 Fall Meeting website.

For the 2005 session, Brent and Terri asked Celeste Null, the Director of Biomedical Engineering of Intel Corporation's Digital Health Group to present Intel's strategy for entry into the field of digital health records. They wanted the student's concerns and suggestions to have some type of impact on their future development, if possible. Ms Null readily agreed to take the student's concerns and proposed safeguards back to her group at Intel. It should also be noted that Ms. Null was a charter member of the ASU Chapter of AEMB and she earned a BME Master of Science degree from Arizona State University (ASU) in 1998. It was an honor to have an AEMB member speak at our first annual session. Celeste is currently in the PhD program in the Harrington Department of Bioengineering at ASU.

Brent and Terri also recruited six AEMB students from different AEMB chapters to serve as discussion facilitators. They provided training in the basics of leading a small group discussion and gave them background information sheet on DH and a list of some potential concerns that could be raised. Celeste gave a brief presentation

stating that the technologies enabling DH can provide efficient and effective delivery of medical care, thus improving quality of care and reducing costs and errors, but it could also present a number of ethical challenges which have not been resolved yet. Students were divided into groups based on sub-topics, as follows: 1) personalized medicine and the potential for racial discrimination; 2) records security and privacy, including how to limit insurance company access to patient health information in implantable or wearable medical devices; and 3) economic issues, such as affordability for low income patients. Facilitators were able to provide additional information and statistics from their training fact sheets and helped keep the discussions on schedule. Afterwards, one student from each group gave a short presentation to the entire group highlighting two or three of their concerns and ideas to prevent or mitigate ethical problems. The representatives were asked to not report repetitive recommendations to increase the range of ideas presented; however, each group's entire list was given to Celeste.

Students seemed excited about the prospect that their suggestions could impact the decisions of a large corporation in a nascent technology and felt optimistic about their ability to make these types of evaluations in their own chosen fields of research.

This year, the discussions will focus on the potential for ubiquitous sensors and the likely ethical dilemmas. Widespread use of sensors, many of which would be unnoticeable, appears eminent. Some of the reasons for this are 1) the reduction in sensor

cost and size; 2) society's desire for improved anti-terrorism measures; 3) a wider range of what can be sensed; and 4) extensive wireless communications networks, which can facilitate remote sensing. As many of the recent developments in sensing technology are in biosensors, we feel that it is valuable for bioengineering students to become familiar with this multi-faceted issue. Our presenter will be Jay West, an officer of Arcxis Biotechnologies, which is a new company, engaged in the development of biosensors. Dr. West will provide background information on biosensors. Students will have the opportunity to learn how to raise and evaluate ethical concerns, debate preventative measures and provide feedback to an industry representative involved in a developing field. Student facilitators will be trained as they were last year to guide the small group discussions.

The National Science Foundation is sponsoring this year's session and providing funds for travel grants. This newsletter contains information on who is eligible for travel grants. The student organizers ask that faculty members and mentors encourage their students who will be attending the BMES Fall Meeting to attend the Friday morning session. The room location will appear in the meeting program.

Students who wish to volunteer as discussion group facilitators please contact: Terri Murray, teresa.murray@asu.edu or Brent Satterfield brent.satterfield@asu.edu, Harrington Dept of Bioengineering, Arizona State University, Tempe, AZ 85287-9709.

Graduate Student Eligibility

Melodie Benford, Texas A&M University

Since Dr Daniel Reneau founded Alpha Eta Mu Beta (AEMB) in 1979 at Louisiana Tech University, AEMB has initiated outstanding students in biomedical engineering.

It is important to recognize all deserving students who excel in the biomedical engineering field, therefore it is important to include graduate students in the society and its functions. As many are recent graduates, they can serve as a bridge between the biomedical engineering professors, undergraduate students, and alumni; promoting a closer union between them. This will encourage scholarship and leadership among the members, advocate further participation in biomedical engineering-related activities, establishing a base for the society to increase in prominence. Furthermore, acquiring these experienced students will benefit chapters by their involvement as well as providing insider tips to undergraduates, such as helping with job searches, evaluating their post-baccalaureate options, and competing for fellowships.

During the 2006 AEMB Nation Meeting in Chicago, Illinois, revisions to the constitution concerning graduate student eligibility will be voted on. The main intent of this revision is to identify outstanding biomedical engineering graduate students who may not have had the opportunity to be initiated as undergraduates. The challenge is to find an unambiguous and standardized means of identifying excellent graduate students in biomedical engineering.

The revision considers three stipulations for identifying these students: ABET accreditation, GPA versus ranking system, and a course hours requirement. The proposed wording to be voted on is, as follows:

“To be eligible for membership, a graduate student 1) must be a candidate for a degree in Biomedical Engineering or Bioengineering from a university with an ABET accredited undergraduate program; 2) must have completed at least twelve credits of graduate study for students in a PhD program, or eight hours of study in a Masters degree program, six of which are Biomedical Engineering or Bioengineering courses towards the degree; and 3) must have a grade-point-average of at least 3.75 on a 4.0 scale or rank in the upper one-third of eligible graduate students, whichever is higher.”

We are asking that each chapter send at least one representative to the AEMB Annual Meeting to be held at Noon on October 12, 2006 during the BMES Annual Meeting in Chicago. This is a big step for us and each chapter has one vote.

Chapters must be current on paying their initiation fees and have given Pat Horner the list of 2006-07 officers to be eligible to vote.

A limited number of travel grants are available; please see the article on the AEMB Ethics Session in this newsletter.

PLEASE SEND US YOUR NEW OFFICERS NAMES AND E-MAIL ADDRESSES

Alpha Eta Mu Beta

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September 2006

***We Need YOUR Help
To Update Our Contact List To
Enable Effective Communication This Year***

**Please send us your list of 2006-2007 Officers.
Include their name, title and e-mail address.**

**Also, if any of your school information listed
above is inaccurate, please send us a
correction.**

Please send your updates to pat.horner1@verizon.net

Or, you may mail the information to

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2005 AEMB Annual Meeting Minutes
September 29, 2005
(Unapproved)

These minutes are from the 2005 AEMB Annual Meeting. They have not been approved yet.

1. Chapters

- Currently 32 ABET accredited Biomedical Engineering Departments
- Currently 20 Alpha Eta Mu Beta Chapters
- New Chapters in attendance received their charters:
 - Georgia Institute of Technology
 - University of Rochester
 - Case Western Reserve University
- New Chapters not in attendance:
 - Virginia Commonwealth University
 - University of Wisconsin-Madison
- New Chapters in attendance assigned a mentor chapter:
 - Georgia Institute of Technology assigned Louisiana Tech University
 - University of Rochester assigned Boston University
 - Case Western Reserve University assigned Washington University St. Louis
- Chapters Dues
 - Dues Paid:
 - Arizona State University
 - Boston University
 - Georgia Institute of Technology
 - Johns Hopkins University
 - Louisiana Tech University
 - Milwaukee School of Engineering
 - Texas A&M University
 - Tulane University
 - University of Miami
 - University of Rochester
 - Washington University St. Louis
 - Dues Not Paid:
 - Case Western Reserve University
 - Marquette University
 - Rensselaer Polytechnic Institute
 - University of Illinois Chicago
 - University of Iowa
 - University of Pittsburgh
 - University of Wisconsin-Madison
 - Vanderbilt University
 - Virginia Commonwealth University

2. Minutes of 2004 AEMB Annual Meeting were approved unanimously as amended.

3. AEMB Finances

- Bank Balance is \$20,932.98
- Sold over 175 honor cords
- Thanks to Coulter Foundation Student Travel Grant, AEMB Travel Awards are \$350

2005 AEMB Annual Meeting Minutes September 29, 2005

4. Ethics Committee Report

- Special thanks to Terri Murray & Brent Satterfield for co-chairing First AEMB Ethics Session
- Terri Murray reported:
 - Thanks to Intel, sponsor for Celeste Null, session speaker
 - Thanks to AIMBE, sponsor for Terri and Brent to co-chair session
 - Session topic is Digital Health, Intel excited to receive student input
 - Terri asked for volunteers for small group leaders

5. Graduate Student and Faculty Admissions Criteria Committee Report

- Melodie Benford from Louisiana Tech University reported recommendations
 - Listed Eligibility Requirements for other Honor Societies
 - Election Criteria
 - Performance as Undergraduate Students
 - Grade Point Average on Graduate Work
 - Percentage of Graduate Students
 - Hours of Graduate Work Completed
 - Letters of Nomination/Support
 - Recommendation (with amendments)
 - To be eligible for membership, a graduate student must be a candidate for a degree in Biomedical Engineering or Bioengineering, must have completed at least 12 semester credits of graduate study towards the degree, 8 of which are for Biomedical Engineering or Bioengineering graduate courses and excluding research credits, and must have a grade-point-average of at least 3.75/4.0.
 - Email to be sent to all chapter representatives allowing 30 days for comments.
 - Student Members to nominate outstanding faculty members
 - Paul Hale suggested call for faculty member nominations; criteria already in our Constitution.
 - Value of AEMB membership
 - Chapters hold workshops, possibly interview workshops; socials to interact with peers; luncheons with professors. Chapters can coordinate with BMES chapters to host BME Day.

5. “The Four Pillars of AEMB

- Scholarship, Leadership, Character, and Service
- Request for project submissions, none received.
- Ideas to promote involvement: Possibly amend Constitution to add requirement to submit a project report each year as part of chapter annual report. Make it a competition, maybe related to ethics topic and the winner gets to present project at session.

6. Fundraisers

- Fundraiser that can become our trademark. Travel awards are huge incentive to attend the AEMB business meeting at the BMES annual meeting. Funds need to be raised to replace the Whitaker Foundation travel awards.
- Senior T-shirts (Lindsey Bonsignore of University of Rochester to head this committee)
 - Submit student designed T-shirts
 - Design 5 different T-shirts
 - Sell at BMES annual meeting

7. Website and Newsletter

- Thanks to Michael Cobb for updates to and donation of AEMB website, <http://ahmb.org>
- Changes
 - Add binder section with activity reports so chapters can be better organized
 - Add section that lists all members from all chapters, with year inducted
- Send Newsletter to BME Department Chairs, Chapter Advisors, and Student Presidents. Also send to BMES Fellows and AIMBE College of Fellows

*2005 Annual Meeting Minutes
September 29, 2005*

8. Chapter Development

- Discussed reviving inactive chapters
- Timely Dues Payment
 - Dues are due from February to May for new initiates
 - Send reminders to chapters of their status
- Recruit new chapters
 - Herb Voigt to send invitations/applications to all ABET accredited programs

9. IRS non-profit organization status

- Pat Horner has begun to investigate
 - Re-instate Louisiana corporation
 - IRS non-profit 501(c)3 status
 - Mail at non-profit rates
 - Approach foundations for grants

10. BMES 2006 Annual Meeting in Chicago

- Unanimous vote to hold 2006 AEMB Annual Business Meeting at the BMES annual meeting
- 4th Annual Luncheon to be held at the conference

Chapter Members:

We need your contribution here for our next issue of the AEMB Newsletter!

Share a brief account of one of your service or social events, a successful fundraising activity, department news, or how you keep track of alumni members. Please send a photo with your article if you have one to share.

Send your articles to pat.horner1@verizon.net



BIOMEDICAL ENGINEERING SOCIETY

2006 AEMB/REU Travel Award Application

I am applying for an AEMB, Boston University REU, or Vanderbilt VANth Award
Travel award applications must be received on or before **September 19, 2006**. Applicants should be an
AEMB member in good standing, or a former REU student, and Faculty Advisors must have signed the
application to be eligible for travel awards.

First, Last name: _____

School/Organization: _____

Address: _____

Telephone: work/direct (____) _____ home/mobile (____) _____

Email address: _____

AEMB Chapter: _____ Student Id #: _____

REU Program: Year _____ Director: _____

Social Security #: _____

(SS information is only used in the circumstance where award amount is sufficient to require an IRS 1099)

Faculty Consent

By signing this consent, I understand this student is receiving an [] AEMB or [] REU Travel Award to enable participation at the 2006 BMES Annual Fall meeting. I certify this Student to be an AEMB member in good standing or a participant in an REU program. I further certify that this award does not duplicate funding to this student provided by the University or other agency for purposes of participation at the 2006 BMES Annual Fall meeting.

(Department Chair or Alpha Eta Mu Beta Faculty Advisor Signature/Date)

Please send completed and faculty signed applications *on or before* **September 19, 2006**.

to:

AEMB/REU Travel Awards

Patricia Horner, Executive Director

Alpha Eta Mu Beta

P.O. Box 268

Bowie, MD 20719-0268

OR:

pat.horner1@verizon.net

Awards can be disbursed on-site at the BMES meeting only if travel receipts or copies are provided and all the above information is received. Travel awards are made possible by a Coulter Foundation grant to BMES and NSF awards to Boston University and Vanderbilt University.

BMES Student Travel Award Disbursement Policies & Procedures

General

BMES frequently provides or manages travel awards to enable students to attend annual meetings and other events. These travel awards cover only travel expenses as outlined in this section. Any personal expenses are the responsibility of the individual student member. Further, this policy does not apply to catered meals or meal times when meals are provided as part of the BMES Annual meeting. Expenses will be disbursed in accordance with this policy; exceptions to this policy must be approved by the BMES Treasurer or President. Unless otherwise indicated in this policy, the following guidelines and general policies apply. All student travel awards by BMES will have a pre-set maximum amount to be awarded. These amounts may be determined by the President in consultation with the BMES Treasurer and may be recommended by the Student Affairs Committee Chair.

Travel and Lodging Expenses

Travel...Students should seek the lowest appropriate air fare not to exceed coach fare; or railroad coach fare; or travel by private automobile at the established IRS rate plus parking and tolls, the total not to exceed the equivalent coach air fare. Travel shall be at the economy/coach fare, and be booked at least 30 days in advance, unless there are otherwise extenuating circumstances. Copies of airline tickets and/or receipts must be submitted.

Hotel Rooms...Hotel rooms are reimbursable at double-occupancy rates (up to half the cost of the room per student) negotiated in BMES hotel contracts. Students should make every effort to arrange to share rooms to minimize expenses.

Incidental Expenses

All incidental expenses including ground transportation and meals may be reimbursed within the award amount, however, should never exceed the current U. S. General Services Administration (GSA) reimbursement rate (current average = \$50 per day).

Ground transportation...Ground transportation and other related expenses (shuttle, van, parking, or tolls, etc.) should be secured at the most economical rates reasonable.

Meals and Refreshments...BMES Treasurer will annually determine expense guidelines for meals and refreshments during travel and those that are not provided as part of BMES meetings. Reimbursement for meal costs shall be for food and beverage purchases only, when group meals are not provided. **Alcoholic beverage expenses shall be neither paid nor reimbursed with Society funds.**

Procedures

An explanation and description of travel expenses including dates of travel, meal times, and cities traveled to and from should be submitted to the BMES offices along with original receipts within 30 days after the end of the meeting. You may use the electronic Travel Reimbursement Form distributed by the BMES office. (Be sure to include a current address to which the check can be mailed.)

Disbursement of Student Travel Awards

1. Disbursement of awards will be made upon submission of 'Travel Award Application', containing student contact information (including social security numbers) and student Faculty Advisor signature of approval.
2. Disbursement of travel awards will be made upon submission of receipts such as passenger coupons, hotel bills, restaurant receipts, etc. Reimbursement for incidental expenses such as taxi, parking, bag storage, etc. may be requested. Receipts are required for any expense over \$25.00.
3. Disbursement of travel awards can be made on-site at the Annual Meeting if all of the above documentation criteria are met and documentation is provided.
4. Disbursement of travel awards of those student not providing the above documentation, can be made within 30 days of the Annual Meeting once all of the above documentation criteria are met.

July 2006