

# Division of Biological Physics

A Division of The American Physical Society

Fall 1996

## Election Newsletter

*Earl W. Prohofsky*

Dear DBP Member:

I enclose the list of candidates and their statements for the offices of Vice Chairperson, Secretary-Treasurer, and two Member at Large positions on the Executive Committee. The current Vice Chairperson automatically moves up to Chairperson-Elect, the current Chairperson-Elect moves up to Chairperson. There are two positions open for Member at Large (3 year terms) on the Executive Committee and you should vote for two for that position. In addition this year we elect a new divisional member of the APS Council. Two candidates for that position are included on the Ballot. Vote for one for Councillor. The continuing members of the Executive Committee as of March 1997 will be:

### Past Chairperson

*Term ends 3/98*

### Chairperson

*Term ends 3/98*

### Chairperson-Elect

*Term ends 3/98*

### Secretary-Treasurer

*Term ends 03/01*

### Member at Large

*Term ends 3/98*

### Member at Large

*Term ends 3/98*

### Member at Large

*Term ends 3/99*

### Member at Large

*Term ends 3/99*

### Stepping Down March 1997:

#### Past Chairperson

#### Division Councillor

#### Member at Large

Ivar Giever

Dennis Rousseau

Frank Moss

Earl Prohofsky

William Bialek

Shirley Chan

Angel Garcia

Thomas Nordlund

Stuart Lindsay

Watt Webb

Leonard X. Finegold

## MARCH MEETING

The March meeting is scheduled for the week of March 17-21, at the Kansas City MO Convention Center. Our division will have sessions during the first half of the week, March 17-19. We will only have sessions on Thurs. the 20th if our program spills over and cannot be fit into the Mon.-Wed. period. Our Division Business meeting will be held on Tues. March 18 or Wed. March 19, likely at 5:00 PM following one of our sessions and in the same room as the session. The exact time and place will only be available after the sorters meeting (12-13 December) when the actual scheduling is done. The time and place will be available in the meeting Bulletin and will be accessible by email search with the rest of the schedule and on the web page. All members of the division are urged to attend the Business Meeting.

Submitted abstracts for the Biological Physics sessions are to be sent to APS directly by electronic submission if possible. There are advantages to email submission as the entire abstract will be available by electronic search long before the printed Bulletin is distributed. Early information will make possible planning time at the meeting before the last date to make inexpensive travel plans. It is very easy to print out your own personal meeting schedule from the electronic version of the meeting Bulletin. For either mail or elec-

*Cont'd on pg. 7*

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Ballots should be placed in the enclosed envelope. Sign your name at the upper left corner and mail before January 1.

# 1997 March Meeting of The American Physical Society

17-21 March 1996 — Kansas, MO

## Division of Biological Physics, Invited Symposia

**SYMPOSIUM TITLE:** Biological Physics and Beyond with Atomic Force Microscopy and Laser Tweezers

**SYMPOSIUM ORGANIZER:** Paul Hansma

**CHAIR:** Paul Hansma, Department of Physics, University of California at Santa Barbara, Santa Barbara, CA 93106, 805-893-2523 (phone), 805-893-8315 (fax), prasant@physics.ucsb.edu

**SPEAKER 1:** Dr. Carlos Bustamonte, Institute of Molecular Biology, University of Oregon, Eugene, OR 97403-1229, (503) 346-1537, carlos@alice.uoregon.edu

**TITLE:** "Elasticity of Individual DNA Molecules."

**SPEAKER 2:** Dr. Neil Thompson, Department of Physics, University of California, Santa Barbara, CA 93103, (805) 893-3999

**TITLE:** "Observing Protein Motion with Atomic Force Microscopy."

**SPEAKER 3:** Dr. Mike Allen, Digital Instruments, 520 East Montecito Street, Santa Barbara, CA 93103, (805) 899-3380

**TITLE:** "Tapping Mode Atomic Force Microscopy"

**SPEAKER 4:** Dr. Gil Lee, Naval Research Laboratory, 4555 Overlook Ave., SW, Washington, DC 20375-5320, (202) 767-5383

**TITLE:** "Measuring Bond Rupture Forces with the Atomic Force Microscope"

**SPEAKER 5:** Dr. Eric Henderson, Zoology and Genetics, 2112 MBB, Iowa State University, Ames Iowa 50011, (515) 294-2686

**TITLE:** "Functional Tips for Atomic Force Microscopy"

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**SYMPOSIUM TITLE:** Protein Crystal Growth

**SYMPOSIUM ORGANIZER:** Dr. James Baird

**CHAIR:** Dr. James Baird, Department of Chemistry, University of Alabama in Huntsville, Huntsville, AL 35899, (205) 890-6441 (phone), (205) 890-6349 (fax)

**SPEAKER 1:** Dr. Viola Vogel, Center for Bioengineering, Box 357962, University of Washington, Seattle, WA 98195

**TITLE:** "Surface Mediated Crystallization of Proteins in 2-D: A first Order Phase Transition"

**SPEAKER 2:** Dr. David M. Tiede, Chemistry Division, Argonne National Laboratory, 9700 S. Cass Ave., Argonne, IL 60439

**TITLE:** "Mechanisms for membrane protein crystallization measured by small angle neutron scattering"

**SPEAKER 3:** Dr. A. McPherson, Department of Biochemistry University of California, Riverside, CA

**TITLE:** "Applications of Atomic Force Microscopy in Macromolecular Crystal Growth"

**SPEAKER 4:** Dr. D. A. Kirschner, Department of Biology, Higgins Hall, Boston College, 140 Commonwealth Ave., Boston, MA

**TITLE:** "Fibrillogenesis in Alzheimer's Disease and 'Mad Cow' Disease"

**SPEAKER 5:** Dr. E. Trinh, Jet Propulsion Laboratory/Cal Tech MS 183-401, 4800 Oak Grove Drive, Pasadena, CA 91109

**TITLE:** "The Fluid Dynamics of Levitated Protein Solution Droplets"

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**SYMPOSIUM TITLE:** Pattern Formation in Biology

**SYMPOSIUM ORGANIZER:** Peter Jung

**CHAIR:** Peter Jung, School of Physics, Georgia Institute of Technology, Atlanta, GA 30332, phone: 404-894-5247, Fax: 404-894-9958, E-mail: ph287pj@acme.gatech.edu

**SPEAKER 1:** Alexander Mikhailov, Fritz Haber Institute, Faradayweg 4, D-14195 Berlin, Email: mikhailov@fhi-berlin.mpg.de, phone: +49(0)30 8413 5122, Fax: +49(0)30 8413 5106

**TITLE:** "Pattern Formation in Excitable Media"

**SPEAKER 2:** Valentin Krinsky, Institut Non Lineaire de Nice, 1361 Route des Lucioles, 06560 Valbonne, France, Email: krinsky@doublon.unice.fr, Phone: (33) 92 96 73 45, Fax: (33) 93 65 25 17

**TITLE:** "Fibrillation and De-Fibrillation in cardiac muscles"

**SPEAKER 3:** John Milton, Department of Neurology, School of Medicine, The University of Chicago, Chicago, IL 60637, Email: splace@ace.bsd.uchicago.edu, Phone: 312-702-1780, Fax: 312-702-4066

**TITLE:** "Neural Excitation Patterns and Epilepsy"

**SPEAKER 4:** Raymond E. Goldstein, University of Arizona, PAS 445 Tuscon, AZ 85721, phone: 520-621-1065, Email: gold@physics.arizona.edu

**TITLE:** "Competing Patterns of Signaling Activity"

**SPEAKER 5:** Herbert Levine and/or Lev Tsimring, Department of Physics, University of California San Diego, La Jolla, CA 92093. Email: hlevine@ucsd.edu phone: 619 534-4844

**TITLE:** "Spiral Competition due to Genetic Feedback during Dictyostelium Development"

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**SYMPOSIUM TITLE:** Bacteriorhodopsin: Photophysical Applications

**SYMPOSIUM ORGANIZER:** Paul Kolodner, Bell Laboratories Lucent Technologies, Murray Hill, NJ 07974, Tel. (908) 582-7021 e-mail: prk@physics.lucent.com

**CHAIR:** Aihua Xie, Department of Physiology and Biophysics, Albert Einstein College of Medicine, Bronx, NY 10451, 718-430-2894 (phone) 718-430-8819 (fax)

**SPEAKER 1:** Dieter Oesterhelt, Max-Planck Institute for Biochemistry, D-82152 Martinsried, Germany

**TITLE:** "Applications of bacteriorhodopsin in holographic memory and image processing"

**SPEAKER 2:** Sergie Balashov, Center for Biophysics and Computational Biology, University of Illinois at Urbana-Champaign Urbana, IL 61801

**TITLE:** "Photochemical Functioning of Bacteriorhodopsin" (Not Final Title)

**SPEAKER 3:** Paul Kolodner, Bell Laboratories, Lucent Technologies, Murray Hill, NJ 07974.

**TITLE:** "Electronic ink from modified bacteriorhodopsin"

**SPEAKER 4:** Dan Smithey, Bend Research, 64550 Research Road Bend, OR 97701

**TITLE:** "Holographic Applications of Bacteriorhodopsin" (Not Final Title)

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**SYMPOSIUM TITLE:** Molecular Motors and Stochastic Ratchets.

**SYMPOSIUM ORGANIZER:** Charles R. Doering, University of Michigan, Department of Mathematics, University of Michigan Ann Arbor, MI 48109-1109, e-mail: doering@math.lsa.umich.edu tel. (313) 936-2913, fax. (313) 763-0937

**CHAIR:** Charles R. Doering

**SPEAKER 1:** Prof. Marcelo Magnasco, The Rockefeller University, 1230 York Avenue, New York, NY 10021, e-mail: marcelo@tton.rockefeller.edu, phone: (212) 327-8542, fax: (212) 327-8544

**TITLE:** "Thermal ratchets and molecular motors: an introductory survey"

**SPEAKER 2:** Prof. Christoph Schmidt, Department of Physics/Biophysics Research Division, University of Michigan, Ann Arbor, MI 48109-1055, e-mail: cfs@umich.edu, phone: (313) 763-9139 fax: (313) 764-3323

**TITLE:** "Motor Mechanics: Experimental Studies of individual motor proteins"

**SPEAKER 3:** Prof. George Oster, Department of Molecular and Cellular Biology, University of California, Berkeley, CA 94720-5227, e-mail: goster@nature.berkeley.edu, phone/fax: (510) 642-3112

**TITLE:** "Modelling Molecular Motors: From kinesin to the bacterial flagellar motor"

**SPEAKER 4:** Prof. Tamas Vicsek, Department of Atomic Physics Eotvos University, Puskin u. 5-7, Budapest, 1088 Hungary, e-mail: h845vic@ella.hu

**TITLE:** "A Statistical Physicist's Approach to Biological Motion: From the Kinesin Walk to Muscle Contraction"

**SPEAKER 5:** Dr. Martin Bier, Department of Surgery, MC 6035 University of Chicago, Chicago, IL 60637, e-mail: mbier@surgery.bsd.uchicago.edu, phone: (312) 702-6302, fax: (312) 702-1634

**TITLE:** "A Stochastic Ratchet for Particle Separation: Theory and experiment"

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**SYMPOSIUM TITLE:** Protein Folding on the Submillisecond Time Scale

**SYMPOSIUM ORGANIZER:** Dr. Denis Rousseau, Department of Physiology and Biophysics, Albert Einstein College of Medicine Bronx, NY 10461, 430-4264 (phone), (718) 430-8819 (fax), rousseau@aecom.yu.edu

**CHAIR:** To be determined

**SPEAKER 1:** Dr. Robert Callender, Department of Biochemistry Albert Einstein College of Medicine, Bronx, NY 10461, 212-650-6872(voice), 5503 (fax), call@scisun.sci.ccny.cuny.edu

**TITLE:** "The primary folding events of apomyoglobin"

**SPEAKER 2:** Dr. Jay Winkler, Beckman Institute, Mail Stop 139-74, California Institute of Technology, Pasadena, CA 91125 (818) 395-2834

**TITLE:** "Protein folding Triggered by Electron Transfer"

**SPEAKER 3:** Dr. Charles M. Phillips, Department of Chemistry University of Pennsylvania, Philadelphia, PA 19104-6323, (215) 898-3605, phillips@a.chem.upenn.edu

**TITLE:** "Dynamics of Solvation Destabilization of Proteins"

**SPEAKER 4:** Dr. Martin Gruebele, School of Chemical Sciences, University of Illinois, Urbana, Illinois 61801, (217) 333-1624, gruebele@aries.scs.uiuc.edu

**TITLE:** "Temperature-Jump-Induced Fast Protein Folding"

**SPEAKER 5:** Dr. Denis Rousseau, Department of Physiology and Biophysics, Albert Einstein College of Medicine, Bronx, NY 10461. (718) 430-4264, rousseau@aecom.yu.edu

**TITLE:** "Folding of Cytochrome c Initiated by Submillisecond Mixing"

*Cont'd on pg. 7*

# Candidates Statements and Vita

## Candidates for Vice-Chairperson

### **BILL DITTO**

Dr. William Ditto was born in Anchorage Alaska in 1959. He graduated from the University of California at Los Angeles with a Bachelor of Science degree in Physics in 1980. In 1988 he received his Ph.D. in Theoretical Physics (Field Theory) from Clemson University. Dr. Ditto subsequently worked for the department of the Navy in Washington DC where he demonstrated the first experimental control of chaos. Dr. Dittos work has been featured on the Cover of Science News, and has been reported in numerous articles in Science, Nature, Scientific American and Time magazine. His work has led to practical applications of chaos research. He has licensed control of chaos technology to the health care industry with the goal of developing smart heart defibrillators and is also working on control of chaos strategies for the possible control of epilepsy. Dr. Ditto is currently leading the Applied Chaos Laboratory in the school of physics at the Georgia Institute of Technology. In addition to research Dr. Ditto has organized numerous conferences on the applications of chaos and is currently also head of Control Dynamics, a startup company focused on the development of chaos control strategies for industrial, engineering and biomedical applications.

### **BRUCE WEST**

Dr. Bruce J. West received his Ph.D. in Physics from the University of Rochester in 1970. After a post doctoral stint with Elliott Montroll he went into industry working at small research and development companies for almost two decades. He was a founding member of the La Jolla Institute ( a not for profit research company) in 1978 and became the Associate Director and later the Director of one of it's divisions that emphasized research into the applications of nonlinear dynamics. He was in San Diego for 15 years where he collaborated quite extensively with such people as Jonas Salk at the Salk Institute and with scientists at UCSD and the UCSD Medical School, all from his vantage point with the La Jolla Institute. His research thrust at that time was in biophysics and the application of nonlinear dynamics to biology and physiology. After becoming exhausted with contract research in 1989 he went to the University of North Texas as Professor of Physics and Chair of the department. After four years he stepped down as Chair and formed the Center for Nonlinear Science of which he is the Director. Dr. West has over 240 publications of various kinds, including a dozen books, and is an editor of various scientific journals as well as a book series on nonlinear phenomena in the life sciences. He is also a Fellow of the American Physical Society.

## Candidates for Executive Committee

### **PETER JUNG**

Peter Jung received his Master and Doctoral degree in Theoretical Physics from the University of Ulm, Germany in 1983 and 1985, respectively. He was working under the supervision of Hans Risken on nonlinear stochastic processes and applications in quantum optics. After his Ph.D, he joined the University of Augsburg as a research associate working on problems in non-equilibrium Statistical Physics. During this time, the contours of his research began to sharpen around the central issue of the creative role of fluctuations in systems far away from thermodynamic equilibrium. Peter's work has paved the way for many of those ideas (e.g. stochastic resonance) into biology where they are being currently discussed e.g. in the context of neuronal information processing. In 1993, Peter was awarded with the prestigious Heisenberg fellowship. He then joined the Department of Physics and the Beckman Institute of the University of Illinois at Urbana-Champaign as a visiting assistant professor to start an interdisciplinary research project on pattern formation in the presence of fluctuations in general and specifically in the context of patterns in neuronal assemblies, hippocampal slices and glial-cell cultures. The project has been carried through successfully linking concepts of of Statistical Physics such as self organization and criticality to actually observable brain waves. In 1996, he joined the school of Physics of the Georgia Institute of Technology as a visiting assistant professor.

*Candidate's Statement:* The way I got connected with Biological Physics is perhaps typical for a theoretical physicist. Starting out in a field, merely determined by the limited perspective of an undergraduate student and randomness, then doing what the advisor was suggesting to do and finally - as a postdoc - slowly starting out to explore the scientific world and discovering the interesting problems of Biological Physics. Could it have been easier? Perhaps! However, my voyage through different areas of physics has connected me with scientist from a variety of disciplines such as nonequilibrium statistical physics, stochastic processes and (temporal and spatio-temporal) nonlinear dynamics. I feel that I can contribute to the division of Biological Physics as a executive member by mediating connections between Biology and Physics specifically where expertise in the areas mentioned above is important. How would I do this? 1. Generally by being available for discussions and sharing information 2. Continue organizing meetings and symposia. I have been organizing a meeting on "Fluctuations in Living Systems" this March in conjunction with the APS March Meeting in St. Louis. Currently, I am organizing a symposium for the APS March Meeting 1997 on "Pattern Formation in Biological Systems". 3. Emphasize specifically on the analysis and modeling of spatio-temporal dynamics in biological systems such as the brain and heart. 4. Being an active member of the American Physical Society

## JOHN MILTON

John G. Milton was born in Halifax, Nova Scotia. At McGill University (Montreal) he received his bachelor's degree in biology (1971) and doctorate in physical chemistry (1975). After completing post-doctoral fellowships in mathematical biology (Kyoto University, 1974-76) and platelet physiology (McGill University, 1976-78), he developed an interest in using mathematical modeling techniques to study problems in physiology and medicine, particularly those pertaining to the nervous system. Subsequently, he received a medical degree from McGill University (1982) and then completed a neurology residency (1986) and fellowship (1987) in clinical electrophysiology at the Montreal Neurological Institute. He was one of the founding members of the Center for Nonlinear Dynamics in Physiology and Medicine (McGill University). He is presently Associate Professor of Neurology at the University of Chicago. He is a regular contributor to the physics literature on topics which include coupled map lattices, delayed feedback control mechanisms and the effects of noise on their dynamics. This work has emphasized applications to the human nervous system in health and disease.

*Candidate's Statement:* Many problems encountered by clinicians have direct analogies to problems dealt with by physicists, for example, the control of nonlinear dynamical systems is related to the treatment of epileptic seizures and cardiac arrhythmias. Job market pressures have caused many young physicists to pursue careers in medicine. My goals are 1) to increase the awareness of the physics community to the relevance of physics to medicine; and 2) to encourage clinicians with physics backgrounds to apply ideas developed at the blackboard to the bedside. First steps towards these goals include increasing the number of good papers at physics meetings on life science related topics and identifying physicians with physics backgrounds.

## JOHNNY POWELL

Biological physics excited my intellectual passion from the point—nearly two decades ago—that I was introduced to the notion that DNA function could be examined using the principles and techniques of condensed matter physics. I received my PhD in Physics from Arizona State University in 1983. After a two year postdoctoral fellowship at ASU, I started measuring the low-frequency vibrational IR spectra of DNA as a visiting scientist at the Max-Planck Institute for Solid State Research. Since 1987 I have been on the Physics Faculty at Reed College where I received NSF-ILI, NSF-RUI, Office of Naval Research, Research Corporation, and Howard Hughes Medical Initiative funds to support undergraduate research in infrared spectroscopy of novel nucleic acid systems. I am a member of the Biophysical Society and the Council of Undergraduate Research as well as a lifetime member of the American Physical Society.

*Candidate's statement:* I am very thankful for the possibility of serving the Division of Biological Physics. My service would be unique for the DBP in the following two areas: jobs and education for biological physicists. The Division of Biological Physics has a unique opportunity to disseminate information to many young physicists concerning job opportunities. Biological physicists are needed to rationalize the search for better pharmaceuticals. My collabora-

tion with Isis pharmaceuticals has provided me with valuable insights concerning industry-academia relationships as well as a clear comprehension of the knowledge and technical base which make a physicist successful in such collaborations. My goal will be: insuring that the DBP is correctly poised to help biological physicists impact rational drug design. Given the new education-oriented directives of the NSF it is clear that teaching quality has become a high-pitched national priority linked to research funding. The connection between high quality undergraduate education and research is Reed's forte; therefore I am in a unique position to help the DBP unify its objectives with the APS Educational Forum. I want to lead the DBP in being a national leader in setting standard for both graduate and undergraduate biological physics training.

## MARK SPANO

Mark Spano graduated Summa cum Laude from St. Joseph's College in Philadelphia in 1975 with a BS in Physics and subsequently from the University of Maryland in 1977 with his MS and in 1980 with his PhD in experimental condensed matter physics. He has worked for the Navy since that time. Initially working in magnetism and magnetic materials, Dr. Spano became interested a decade ago in the nonlinear aspects of such materials. This in turn led into a passion for experimental nonlinear dynamics and chaotic systems. The techniques he studied with regards to chaos and its control turned out to have a much broader applicability to heart rhythms and to neural signals. His recent work has touched the control of chaotic rhythms during atrial fibrillation in humans, the identification of canine ventricular fibrillation as an example of chaos, and the development of the "anticontrol" or maintenance of chaos as a means of treating population bursting in epileptic brain tissue. Since coming to NSWC, Dr. Spano has published over 50 articles in refereed journals including Physical Review Letters, Science, and Nature. Additionally he is one of the organizers and founders of the Experimental Chaos Conference series. Recently he has been granted three patents on the control of chaos in biological tissue, with other patent applications pending. Honors include the Award for Best Independent Research Project in the Navy for 1991 and The Johns Hopkins University Applied Physics Laboratory Award for Outstanding Refereed Research Publication in 1991. His work has been read into the Congressional Record by the Honorable Constance Morella in 1992 and has been written up in prominent national and international publications such as Science News, Scientific American, The Economist, Geo, and The Washington Post.

*Candidate's Statement:* While many of the exciting advances in physics arise from the dozen or so "established disciplines" that every physics department offers, I feel that a huge advantage can be gained by breaking out of these established molds and applying the problem-solving expertise of physics to other fields. This is one of the great strengths of the biological physicist. Yet it also works to his disadvantage since traditional physics departments often fail to provide a home for someone working in such a non-traditional field. Recently I have seen hopeful signs that some leading physics departments are beginning to see the desirability of fostering such non-traditional research and I would like to work toward the goal of accelerating this trend by aggressively promoting the field at the annual APS meeting, by encouraging universities to have colloquia featuring DBP members, and by encouraging physics departments that are hiring to consider hiring a nontraditional physicist.

## ***Candidates for APS Councillor***

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### ***ELI GREENBAUM***

Elias Greenbaum is leader of the 10-member Biotechnology Research Group, Oak Ridge National Laboratory and adjunct professor of biotechnology, The University of Tennessee, Knoxville. He received his B.S. degree in physics from Brooklyn College (1965) and Ph.D. in physics from Columbia University (1970). His Ph.D. thesis, in experimental nuclear physics, was performed under the guidance of Prof. Chien-Shiung Wu. In 1970 he joined the biological physics research group of Prof. Hans Fraunfelder at the University of Illinois, Urbana-Champaign as a post-doctoral research associate. In 1972, he was appointed assistant professor of biophysics and biochemistry at the Rockefeller University where he started his research program in photosynthesis in collaboration with Prof. David Mauzerall. He was appointed staff scientist at the Union Carbide Corporate Research Laboratory in Tarrytown, NY and adjunct associate professor at the Rockefeller in 1977. In 1979, Union Carbide Corporation transferred him to Oak Ridge National Laboratory following closure of their Tarrytown laboratories. Greenbaum has served the Division of Biological Physics as executive committee member-at-large (1981-83), secretary-treasurer (1984-88), and chairman (1991). He has also, in collaboration with Prof. Linda Powers, organized a number of DBP symposia and short courses. He is a fellow of the American Physical Society and the American Association for the Advancement of Science. His main areas of research are in the fields of photosynthesis and photobiological conversion and storage of solar energy. Greenbaum received the 1995 Department of Energy Biological and Chemical Technologies Research Program Award and several Lockheed Martin Energy Research Corporation awards. He is editor-in-chief of AIP's biological physics series and served as associate editor of the Biophysical Journal (1989 - 1994). He is also a member of the Publications Committee of the Biophysical Society. In 1991 Greenbaum was appointed Watkins Visiting Professor, Wichita State University, where he presented a series of lectures on photosynthesis, biotechnology, and renewable energy production.

*Candidate's statement:* A councillor is a member of a council, in this case the APS Council, the Society's governing body composed of members who are equal in power and authority. The Council elects members to the APS Executive Board whose duties include carrying out Council policies, overseeing operations of the Society, reviewing budgets, and authorizing public policy statements. The job of the DBP Councillor is to attend Council meetings as the eyes, ears, and spokesman for the Division of Biological Physics and report the results of those meetings, via the DBP Executive Committee, to the membership. If elected, that's the job I'll do.

### ***BOB CALLENDER***

Bob Callender was born in St. Paul, Minnesota in 1942 and was educated at the University of Minnesota, receiving the B. A. degree in mathematics in 1963. He received his Ph. D. degree in solid state physics at Harvard University in 1969 under the direction of Peter Pershan and did postdoctoral research at the University of Paris in solid state physics from 1969-1970. He joined the physics faculty

at the City College of the City University of New York in 1970, becoming Distinguished Professor of Biophysics in 1980. In 1996, he moved to the Albert Einstein College of Medicine where he is now Professor of Biochemistry. He has held visiting professorships at the Hebrew University, Jerusalem (1977), and at Columbia University (1986) and was a visiting staff member of Los Alamos National Labs (1992-1993). He is a fellow of the APS and a member of the Biophysical Society, American Society for Photobiology, American Chemical Society, and The Protein Society. He has served the physics community as member of the biophysics Advisory Council of the New York Academy of Sciences (1984-1990), member of the Division of Biological Physics Executive Committee (1988-1991), Division of Biological Physics, vice-Chair elect, vice Chair, Chair (1991-1993), and member of the American Physical Society Nominating Committee (1993-1995). He served as a panel member of the NSF Biophysics program (1987-1990) and is an NIH reviewers' reserve (1995-1999), serving frequently on the biophysics (BBCA and BBCB) panels. He has served as editorial board member of Biophysical Journal (1985-1991), Basic and Applied Biological Physics series (AIP Press) (1994-1996), and Biospectroscopy (1994-1998). His research activities are centered on measuring structural and dynamical properties of proteins in order to understand how they arrive at their structures and the molecular mechanisms of protein function that derive from their structure and dynamics. He has developed vibrational spectroscopy in several directions to perform useful measurements. He is working on understanding enzymatic catalysis to understand the molecular basis of why enzymes are such efficient and fast catalysts and why they are so specific for a particular set of chemical reactions. A second interest is measurement of the primary kinetic steps in the process by which an extended polymer of a polypeptide chain folds up into a final protein compact structure. These early events, on a picosecond and nanosecond time scale, are central to understanding the protein folding problem.

*Candidate's Statement:* This is a rather upsetting time for the physics community. Job opportunities in physics are dismal, to say the least, and the support for research and development in physics is on the decline. I also think that the field is in trouble, and feels it so, because the intellectual and scientific pursuits of the past 50 years of central importance to physics have, in some sense, crested. While really important fundamental issues abound and applied physical research is still quite relevant in the traditional areas of physics, it no longer supports, in my view, the efforts of our numbers. I believe that we need, in a very deep and serious way, to break out of our past ways. We need to look at how we train people, what constitutes a physics education, and how this relates to the needs of society and to what constitutes an educated person. I do not have a list of basic answers to these questions. But they need to be asked and answered. It seems clear to me that the APS has a central role in this discussion. My sense, in fact, is that such sole searching is more and more a topic for the APS, whether formally or informally. I can contribute to this discussion, I think, because of the interdisciplinary nature of my research, which has spanned a number of areas in physics: solid state physics, atomic physics, and is now deeply rooted in biophysics. I have also been very active at City College in designing the physics curriculum, and I chaired the committee which designed a new interdisciplinary degree program in applied physics. Our own community does not have the problems of the general physics

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**SYMPOSIUM TITLE:** Highly Swollen Phases: From Simple Amphiphiles to DNA

**SYMPOSIUM ORGANIZER:** Dr. Michael Schick, Department of Physics MF-15, University of Washington, Seattle, WA 98195

**CHAIR:** Dr. Michael Schick

**SPEAKER 1:** Didier Roux, Centre de Research Paul-Pascal, CNRS, Av. du Dr. Schweitzer, F-33600 Pessac, France, (e-mail roux@crpp.u-bordeaux.fr)

**TITLE:** "Transfection of DNA using small multilamellar vesicles prepared under shear"

**SPEAKER 2:** Kell Mortensen, Dept. of Solid State Physics, Riso National Laboratory, DK-4000, Roskilde, Denmark

**TITLE:** "Micelles, Lamellae and Connected Bilayer Membranes in Block Copolymer Melts, Blends and Solutions"

**SPEAKER 3:** Leonardo Golubovic, Physics Department, West Virginia University, Morgantown, WV 26506-6315, (e-mail lgolub@jazz.wvnet.edu)

**TITLE:** "Gaussian Curvature and Structure of Fluid Membrane Phases"

**SPEAKER 4:** Reinhard Strey, Institute fuer Physikalische Chemie Luxemburger Str. 116, D-50939 Koeln, Germany, e-mail rstrey@uni-koeln.de

**TITLE:** "Scaling of large length scales and ultralow tensions in water, oil, and amphiphile systems"

**SPEAKER 5:** Rudi Podgornik, J. Stefan Institute, Ljubljana, Slovenia and Laboratory of Structural Biology, National Institutes of Health, Bethesda, MD 20892 USA, e-mail (rudi@helix.nih.gov)

**TITLE:** "DNA mesophases: from concentrated to dilute"

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## ***IN ADDITION THE FOLLOWING SPEAKERS WERE INVITED TO KICK OFF CONTRIBUTED SESSIONS***

**TOPIC:** Heme Proteins

**SPEAKER:** Dr. Paul Champion, Department of Physics, Northeastern University, Boston, MA 02115, (617)373-2918, CHAMP@neu.edu

**TITLE:** "Investigations of Heme Protein Reaction Dynamics Using Femtosecond Coherence Spectroscopy"

**TOPIC:** Bioengineering and Medical Applications

**SPEAKER:** Dr. J. J. Collins, Dept. of Biomedical Engineering, 44 Cummington St., Boston University, Boston, MA 02215, collins@buenga.bu.edu

**TITLE:** "Bioengineering Spin-offs from Dynamical Systems Theory"

**TOPIC:** Membranes and Neuroscience

**SPEAKER:** Dr. Huey-Wen Huang, Dept of Physics, Rice University, P.O. Box 1892, Houston, Texas 77251, Tel #: 713-527-4899, huang@ion.rice.edu

**TITLE:** Membrane active peptides: modes-of-action, phase transitions and supramolecular assemblies.

**TOPIC:** Biological molecules in the condensed phase

**SPEAKER:** Dr. Arun Nadarajah, Dept. of Chemical and Materials Engineering, University of Alabama in Huntsville, Huntsville, AL 35899

**TITLE:** "Relation between the Growth Mechanism and Internal Structure of Protein Crystals"

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community. The intellectual content of the biological sciences, certainly biophysics, is vast, and we have just begun to tap it and the exciting applications that will follow. On the other hand, our field is not well integrated as a significant part of the physics community. It is thriving, relatively speaking, apart from physics. It is not common to find physics departments with someone doing biophysical research, and biophysics courses or biophysics content in standard courses as part of the curriculum are also quite rare. It is clear that there is opportunity here for biological physics to grow and to become more integrated within the physics community. It seems to me that physics must welcome interdisciplinary areas into the community for it to be strong and vigorous. I am pretty sure this will happen over the next many years, and I see signs of it beginning in fact. But those of us, who see that 'business as usual' is not going to work, need to roll up our sleeves and work at it.

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