



NATIONAL SCIENCE FOUNDATION  
4201 WILSON BOULEVARD  
ARLINGTON, VA 22230

Title: Division of Civil and Mechanical Systems (CMS)  
Employment Opportunity--Dear Colleague Letter

Date: February 17, 2005

Dear Colleague:

The Division of Civil and Mechanical Systems (CMS) announces a nationwide search for a Program Director for the Nano and Bio Mechanics of Materials (NBMM) Program at the National Science Foundation (NSF). This position is open until filled.

When the feature size of materials approaches nanometer dimensions, the majority of atoms reside at the surface, which controls chemical and adhesion properties. At nanoscale feature sizes, it becomes energetically unfavorable to nucleate dislocations. Even if dislocations were available, the abundant presence of surfaces/interfaces would severely limit dislocation motion. These two phenomena together control mechanical properties of materials consisting of such nanoscale features as grains, layers, precipitates, or composites. Understanding of the relationship between these nanoscale features, their geometry, concentration and the overall mechanical properties of these nanoscale materials is lacking; yet, such information is critical to the design and development of modern engineering materials and systems. These include micro/nanoelectromechanical (M/NEM) devices, high-strength structural materials, interconnects in integrated circuits, high-performance coatings in hard disk drives, automotive/aerospace tribocomponents and precision machine tools, etc. Just as important, it is reasonable to expect that computational and experimental tools developed in the study of nanomechanics can be applied not only to traditional engineering materials, but also to biological systems from nano to macro scales. These include cells, tissues, muscles, bones, and prosthetic implants. The integration of mechanics with biology opens up new opportunities for collaboration and discovery.

The NBMM program supports research (experiment and theory/modeling/simulation) in mechanical properties of engineering materials and systems containing nanoscale features, such as grains, layers, precipitates, or composites; mechanical and adhesion properties of biological materials, which include but are not limited to cells, tissues, muscles, bones and prosthetic implants, design and development of materials suitable for prosthetic implants; relationship between nanomechanics and tribological properties, effects of environment, surface chemistry and temperature; development of computational and experimental tools to study nano and bio mechanics of materials. Please visit our web site at [http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=13523&org=CMS](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=13523&org=CMS)

Qualification requirements include a Ph.D. in the relevant discipline, plus six or more years of active research in the field, research administration and/or substantial managerial experience in academe, industry, or government. Also important are knowledge of the nano and bio mechanics community, ability to deal with both experiment and theory, and effective communication skills (written and oral). The appointee is expected to function effectively both within specific programs and in a team mode, contributing to and coordinating with organizations in the Engineering Directorate, across the Foundation, and with other Federal and State government agencies. Periodic assignments to leadership positions of inter-divisional, inter-directorate and inter-agency programs may be made. We are particularly interested in attracting women and under-represented minority candidates to these positions.

NSF Program Directors bear the primary responsibility for carrying out the Agency's overall mission: to support innovative and merit-reviewed activities in basic research and education that contribute to the nation's technological strength, security, and welfare. To discharge this responsibility requires not only knowledge in the appropriate disciplines, but also a commitment to high standards, a considerable breadth of interest and receptivity to new ideas, a strong sense of fairness, good judgment, and a high degree of personal integrity. The focus of this search is to identify a scholarly, mentoring and open-minded person to join the present diverse and intellectually integrated team in sharing ENG's responsibilities within NSF's overall mission.

This position may be filled under one of the following appointment options:

- Visiting Scientist Appointment. Appointment to this position will be made under the Excepted Authority of the NSF Act. Visiting Scientists are on non-paid leave status from their home institution and appointed to NSF's payroll as Federal employees. NSF withholds Social Security taxes and pays the home institution's contributions to maintain retirement and fringe benefits (i.e., health benefits and life insurance), either directly to the home institution or to the carrier. Appointments are usually made for up to one year and may be extended for an additional year by mutual agreement.

- Temporary Excepted Service Appointment. Appointment to this position will be made under the Excepted Authority of the NSF Act. Candidates who do not have civil service status or reinstatement eligibility will not obtain civil service status if selected. Candidates currently in the competitive service will be required to waive competitive civil service rights if selected. Usual civil service benefits (retirement, health benefits, and life insurance) are applicable for appointments of more than one year. Temporary appointments may not exceed three years.

Applications and questions concerning this Program Director position should be directed to:

Dr. Yip-Wah Chung, Program Director  
NBMM Search Coordinator  
Division of Civil and Mechanical Systems  
National Science Foundation  
4201 Wilson Blvd, Suite 545  
Arlington, Virginia 22230  
Phone: 703-292-7476  
Fax: 703-292-9053  
Email: [ychung@nsf.gov](mailto:ychung@nsf.gov)

Dr. A. Galip Ulsoy, Director  
Division of Civil and Mechanical Systems  
National Science Foundation  
4201 Wilson Boulevard, Suite 545  
Arlington, Virginia 22230  
Phone: 703-292- 8360  
Fax: 703-292-9053  
Email: [aulsoy@nsf.gov](mailto:aulsoy@nsf.gov)

NSF IS AN EQUAL OPPORTUNITY EMPLOYER COMMITTED TO EMPLOYING A HIGHLY  
QUALIFIED STAFF THAT REFLECTS THE DIVERSITY OF OUR NATION