

Positions Available

**DIRECTOR
USRA Visiting Scientist Program in
Microgravity Sciences and Applications
at the
NASA/Marshall Space Flight Center**

The Universities Space Research Association (USRA) invites applications for a director to lead research efforts and manage the association's visiting scientist program in microgravity materials science and applications in NASA's Marshall Space Flight Center (MSFC) in Huntsville, Alabama. The USRA visiting scientist program in microgravity sciences and applications began in 1971, with one visiting scientist. Over the years the program has grown so that an on-site, full-time director is now required. Currently, 10 PhD scientists are working with government scientists on research into the behavior of materials in a low gravity environment. Topics include solidification physics, bioseparations, crystal growth and other fluid and chemical transport phenomena. The director and visiting scientists have full access to the laboratories and computing facilities of MSFC. In addition, USRA maintains in Huntsville an administrative office that supports the microgravity science and applications program, along with other USRA programs.

The candidate should be a recognized leader in microgravity materials research and have considerable experience in performing and supervising technical programs. The position entails both direct technical interaction and administration of research programs cooperative with USRA and MSFC. Salary and benefits are competitive and attractive and will depend on the individual's qualifications.

The USRA is a nonprofit association created 20 years ago by the National Academy of Sciences. The association currently has 63 university members. Applications and enquiries about the position may be directed to:

Dr. Martin Glicksman
Horton Distinguished Professor
Materials Engineering Department
Rensselaer Polytechnic Institute
Troy, NY 12181
(518) 266-6372

or
Dr. David Cummings
Executive Director
Universities Space Research Association
212 American City Building
Columbia, MD 21044
(301) 730-2656

Please submit resume, salary history and names of reference in confidence by September 30, 1989.

The Universities Space Research Association is an Equal Opportunity Affirmative Action Employer.

Professional Services

ION IMPLANTATION SPECIALIST

Consultation available for optimization and production of ion beams for materials modification and research applications. Unique experience in the production of exotic ion species. Ten years nationwide experience with private and government organizations. C.H. Koch (203) 429-5365.

**NAVAL RESEARCH LABORATORY
Condensed Matter and
Radiation Sciences Division
THREE SENIOR RESEARCH
SCIENTIST POSITIONS**

**At the GM-15 Level
\$57,158 to \$74,303
(Salary dependent on qualifications)**

ASSOCIATE SUPERINTENDENT

Works with the Division Superintendent in planning, directing and administering a broad experimental and theoretical/computational program engaging 100 scientists and engineers in basic, applied, and military research and development. Duties include division administration, conceiving and finding sponsorship for programs, reviewing programs, performing studies, serving as an expert consultant, and presenting information to top level management. (ID # 46-012-14:BC).

**HEAD OF DIRECTED ENERGY
EFFECTS BRANCH**

Exercises technical leadership and supervision over 20 scientists engaged in experimental and theoretical research on the interactions of directed energy beams with matter. All phases of interaction are examined, including the energy coupling, the modification of physical properties, resultant physical state transformation and concomitant modes of damage. Defines tasks, makes personnel assignments, establishes priorities and milestones, and orchestrates the overall research effort to ensure goals are achieved within funding limitations. (ID # 46-020-14:BC).

HEAD OF DYNAMICS OF SOLIDS BRANCH

Exercises technical leadership and supervision over 20 scientists engaged in experimental and theoretical research on the dynamics of solids, including electron excitations produced by photons and particles, phase and chemical changes driven by temperature, pressure and high energy density, and shock and flow induced at laser foci or by hypervelocity impact. Define tasks, makes personnel assignments, establishes priorities and milestones, and orchestrates the overall research effort to ensure goals are achieved within funding limitations. (ID # 46-021-14:BC).

Positions require bachelor's degree or higher (Ph.D. desirable) in Physics, Materials Science or Materials or Electrical Engineering, extensive research experience in the field of condensed matter and radiation science and technology and demonstrated managerial experience in a research environment.

Interested applicants should submit an Application for Federal Employment (SF-171) or detailed resume indicating specific vacancy ID# for which applying on or before 31 August 1989 to:

NAVAL RESEARCH LABORATORY
Civilian Personnel Division (M)
Attn: ID #
4555 Overlook Avenue, S.W.
Washington, DC 20375-5000

An Equal Opportunity Employer • U.S. Citizenship Required

Positions Available

DIRECTOR

Electron Microscopy Facility

Qualified PhD physical sciences electron microscopist sought to fill staff position as director of a new electron microscopy facility at the University of Minnesota. This facility, part of the NSF Engineering Research Center on Interfacial Engineering, will include a new high resolution intermediate voltage TEM with EDS and EELS.

The director will participate in federally sponsored research, will train and supervise graduate students in electron microscopy, will direct the technical support staff, and will be responsible for the management of the electron microscopy center and its facilities. Salary commensurate with experience.

Minimum qualifications include a PhD degree and four years experience in transmission electron microscopy (may include PhD experience).

Interested persons should send their curriculum vitae and the names of three references by **August 31, 1989** to:

Martha L. McCartney
Department of Chemical Engineering
and Materials Science
University of Minnesota
421 Washington Avenue S.E.
151 Amundson Hall
Minneapolis, MN 55455

The University of Minnesota is an equal opportunity educator and employer and specifically invites and encourages applications from women and minorities.

POSTDOCTORAL APPOINTMENT

**Department of Mechanics
and Materials Science**

Applicants are sought to conduct research in the theory of the phase transformations in metal and ceramic systems. The investigation will be focused on the atomic structure and morphology of phase transformations at the atomistic and mesoscale level. The statistical mechanics approach using the Monte Carlo, molecular dynamics and crystal lattice statics simulations will be employed. Experience with supercomputers is preferred. Candidates should have excellent academic records, publications in refereed journals and some experience in the area of phase transformations. General background in materials science or related field is necessary. PhD degree is required.

To apply, send resume, graduate and undergraduate transcript, three letters of reference, copies of publications to:

Professor A.G. Khachatryan
Department of Mechanics and
Materials Science
P.O. Box 909
Piscataway, New Jersey
08855-0909
tel. (201) 932-4711

Rutgers University is an Equal Opportunity Employer.

RESEARCH ASSOCIATE

Solar Energy Research Laboratory in Colorado seeks research associate to design, conceive and interpret experiments in physics and formulate theories consistent with data obtained. Conduct advanced theoretical research on new and novel semiconductors and other photovoltaic materials. Specifically, characterize and predict electronic properties of semiconductor superlattices, semimagnetic semiconductors and ordered and disordered semiconductor alloys through the use of General Potential Linear Augmented Plane Wave (LAPW) method and methods of statistical mechanics. Collaborate with and provide theoretical support to ongoing experimental research. Prepare articles for scientific publications, and disseminate novel results to the technical community by presenting papers in technical review meetings.

Requires PhD in Physics and one year experience and demonstrated ability in theoretical study of electronic materials using the LAPW method. Experience may be gained through employment or in the context of an educational program.

\$36,000/year
8:00 a.m. - 5:00 p.m., M-F

Respond by resume to Colorado Department of Labor and Employment, Division of Employment and Training, 600 Grant, Suite 900, Denver, CO 80203, Attn: Jim Shimada, and refer to Job Order No. CO3052648.

RESEARCH POSITIONS

University of Missouri-Rolla

Applications are sought for openings that are anticipated in the next six months for postdoctoral fellows, research assistant professors, and research engineers/aides. Applicants should possess a PhD degree in materials science/engineering or related disciplines such as physics, chemistry, ceramic, metallurgical, or chemical engineering. Preference will be given to persons with relevant materials research experience. Rank and salary will be commensurate with qualifications. Applicants should send their current resume and three letters of reference to:

Director
Graduate Center for Materials
Research
University of Missouri-Rolla
Rolla, MO 65401 (USA)

*UMR is an Equal Opportunity/
Affirmative Action Employer*



**FACULTY POSITION:
METALLURGICAL ENGINEERING
Michigan Technological University**

Michigan Technological University is adding a new faculty member in a tenure-track position. The doctoral degree is required; salary and rank are dependent upon qualifications and experience.

We are seeking a person who will develop strong programs of teaching and research in materials, materials processing or extractive/chemical metallurgy.

Applicants are encouraged to respond as soon as possible but applications will be received until the position is filled.

Qualified applicants should reply to:
Professor L.A. Heldt, Head
Department of Metallurgical
Engineering
Michigan Technological University
Houghton, MI 49931, USA

*Michigan Technological University is an
Equal Opportunity Educational Institution/
Equal Opportunity Employer.*

Advertising Contact

Mary E. Kaufold
MRS BULLETIN
Materials Research Society
9800 McKnight Road
Pittsburgh, PA 15237
(412) 367-3036
Fax: (412) 367-4373

Positions Available

INTEL CORPORATION	
SENIOR IC PACKAGE ENGINEER	
<p>BS/MS in mechanical engineering and 6-8 years experience in the semiconductor industry is required. Exposure to surface mount packaging is desirable.</p> <p>In this position, you will be a key member of an engineering team responsible for developing and implementing into production the next generation of plastic molded fine</p>	<p>pitch surface mount packages. An in-depth knowledge of various processes and materials used in plastic molded package assembly is essential.</p> <p>Contact John Nolitt, College Recruiting, 5000 W. Chandler Blvd., Chandler, AZ 85224; telephone (602) 554- 5781; fax (602) 554-2674.</p>
SENIOR POLYMER ENGINEER	
<p>PhD in materials science, polymer science or chemical engineering. Additional training in chemistry, mechanical or electrical engineering would be helpful. Familiarity with the use of analytical tools for the chemical and physical evaluation of polymers is necessary as is adequate facility with theory (and analysis) of polymer processes and behavior.</p> <p>Will assume project responsibility for material and process development and implementation in polymer technology for IC packaging. Areas of priority include new</p>	<p>molding compounds for better mechanical/environmental protection, advanced adhesives, polymer films and coatings and technology for hybrid modules. Job will require development and use of analytical tools, and especially close interaction with chip designers, silicon process developers and package manufacturing engineers.</p> <p>Contact John Nolitt, College Recruiting, 5000 W. Chandler Blvd., Chandler, AZ 85224; telephone (602) 554- 5781; (602) 554-2674.</p>
MATERIALS/MECHANICS ENGINEER	
<p>PhD in materials science or engineering mechanics/ME with a background and strong interest/expertise in mechanical property characterization of materials and structures combining both experimental and analytical (FEA modeling) approaches. Ability to design, perform and interpret experimental data within a framework of quantitative/product performance/reliability essential. Familiarity and facility with material structure/property relationships, computer interfaced test equipment, and mechanics analysis techniques desirable.</p> <p>Develop state-of-the-art advanced packaging technologies to support Intel's next generation components and subsystems projects. Design, conduct and interpret ex-</p>	<p>periments and analyses to verify analytic models of microelectronic package materials performance under conditions simulating/accelerating process and life stresses. Recommend/demonstrate improvements in design/materials. Serve as a key technical resource to materials and mechanics development activities and represent that expertise to product division customers. Job requires facility with analytical tools (FEA) as well as hands-on experimental capability (e.g., creep and fatigue testing).</p> <p>Contact John Nolitt, College Recruiting, 5000 W. Chandler Blvd., Chandler, AZ 85224; telephone (602) 554- 5781; fax (602) 554-2674.</p>
<i>An Equal Opportunity Employer.</i>	

JPL/NASA VISITING SENIOR SCIENTIST
Microgravity Science and Applications Materials Science
<p>The Jet Propulsion Laboratory is seeking a senior scientist to lead and coordinate the NASA Microgravity Science and Applications Materials Sciences Program. The position would allow the appointee to bring scientific expertise to bear on the planning, execution and coordination of broad-based programs in material sciences. Responsibilities include the coordination of ongoing programs, evaluation of proposals for new efforts and participation in overall programmatic planning. Frequent travel and residence in the Washington, DC area will be required. A PhD or equivalent experience and training in material sciences is required with emphasis in electronics materials desirable. Tenured faculty members are the preferred choice although qualified individuals from nonprofit research institutions may also be considered. This position is open for immediate filling. Normal assignment in the Visiting Senior Scientist Program does not exceed two years. Appointees must be U.S. citizens or permanent residents and are expected to return to their home institution following the NASA assignment. Please provide curriculum vitae, bibliography and names of four references to:</p> <p align="center">Dr. Harry Ashkenas 180-900 Jet Propulsion Laboratory Department T11 4800 Oak Grove Drive Pasadena, California 91109 (818) 354-8251</p> <p align="center"><i>An Equal Opportunity Employer.</i></p>

ASSISTANT RESEARCH ENGINEER
<p>Research on fracture and delamination of thin films and coating and on mechanical behavior of high performance composite materials. \$37,700/yr. PhD in materials science with knowledge in fracture mechanics, solid mechanics is essential. Must be familiar with mechanical testing techniques and knowledgeable in optical and scanning electron microscopy. Record of accomplishment in the mechanical behavior of coatings is required. Job and interview in Santa Barbara, CA. Please send ad and resume Attn: Lisa A. Emrich, Materials Department, University of California, Santa Barbara, California 93106.</p> <p align="center"><i>The University of California is an Equal Opportunity/ Affirmative Action Employer.</i></p>

Bonus distribution of the November MRS BULLETIN at the 1989 MRS Fall Meeting in Boston, November 27–December 2. To get your ad in this issue, call (412) 367-3036 before October 10, 1989.

Positions Available

Material Scientist

The Defense Systems & Electronics Group of Texas Instruments is looking for a project leader to join our Advanced Optical Materials Lab on the development of an optical-quality diamond.

Responsibilities involve RF, DC, microwave plasma CVD process development, non-equilibrium processes, nucleation and growth, optical and semiconductor properties, and material characterization. You'll assist with proposal efforts and lab administration.

You must have an MS or PhD in Materials Science, Physics, or related field with 5+ years' materials experience to include knowledge of plasma CVD, optical materials, diamonds, nucleation and growth, and characterization. Previous experience with project administration and proposal preparation is essential.

Please send your resume to: Paul Patak/Texas Instruments/PO. Box 660246, M.S. 3186/Dallas, Texas 75266. Or, call (800) 527-3574, in Texas, call (214) 480-1292.

U.S. Citizenship is required for this position. An Equal Opportunity Employer M/F/V/H



**SENIOR PACKAGING ENGINEER
Intel Corporation**

BSEE/BSME or equivalent with 3-6 years experience in semiconductor packaging assembly. Knowledge of front of line assembly process and equipment (especially wire bond and die attach) is essential. Exposure to TAB technology desired. Previous experience in matrix management beneficial. Basic PC skills (Lotus, word processing) helpful. Good written and verbal communication skills required. Must have working knowledge of SPC concepts and experience in statistically sound experimental design.

Responsibilities will include implementation of plastic package equipment and processes into production. Will develop new TAB bonding and die attach process/methods to meet requirements of new interconnect technology introduction. Support transfer of process and equipment to production floor. Evaluate new package designs and develop necessary tooling to meet new device introductions.

Contact John Nolitt, College Recruiting, 5000 W. Chandler Blvd., Chandler, AZ 85224; telephone (602) 554-5781; fax (602) 554-2674.

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1/3 island	420	410	395	385
1/3	375	365	350	340
1/4	360	355	340	330
1/6	320	310	300	290

Standard 2nd Color add \$285, Matched 2nd Color add \$340. Metallic 2nd Color and \$400. Four Color Process add \$600
The BULLETIN can accommodate special production requirements. Contact MRS for details.

Issue	Ad Closing
October	September 11, 1989
November	October 10, 1989
December	November 10, 1989

Advertising Contact: Mary E. Kaufold, MRS BULLETIN, Materials Research Society, 9800 McKnight Road, Pittsburgh, PA 15237; telephone (412) 367-3036; fax (412) 367-4373.