

JMR Announces Major Reduction in Publication Time Among Other Changes

Several major improvements to the *Journal of Materials Research (JMR)* and its operations should enhance the quality and timeliness of the journal. The highlights of the improvements include a reduction of more than seven months in the average publication time and an increase in the quality of published papers.

Statistics for the last four months of 1999 show that the average time required to publish an article, that is, the time from submission to publication, has been reduced to 9.5 months from 17 months a year ago, with 80% of the articles published in 12 months or less. This improvement resulted from several factors: (1) a six-month backlog of manuscripts, which had been accepted and were awaiting publication, was eliminated by printing several expanded issues; (2) the time required for reviewing and revising manuscripts has been reduced on the average by more than one month by tightening time limits for each step of the process; and (3) the production time after a manuscript has been accepted, which includes copy editing, typesetting, printing, and mailing, was reduced by more than two months by combining all these operations under one roof.

To enhance the quality of published papers, standards and requirements for acceptance of articles have been raised, and review procedures have been tightened.

Some *JMR* publication delays resulted from an inadequate software system for tracking manuscripts. To allow efficient tracking of manuscripts through all phases of the editorial and publication processes, the editorial office recently installed new software. The enhanced capabilities of the new software will identify manuscripts that are overdue in each stage of the review and publication processes and send memoranda to the individuals responsible. It will also enable generation of statistics on how well the journal is doing and identify where improvements need to be made. With these capabilities, *JMR* expects to reduce the review time still further.

JMR subscribers may now access the full text of the journal electronically on the MRS website several weeks before the print edition is available. All papers, including figures and micrographs, appear online. This benefit is available only to individuals and institutions that subscribe to *JMR*.

MRS members will continue to be able to view *JMR* rapid communications and *JMR Abstracts* online. *JMR Abstracts* service provides titles, abstracts, author names and their affiliations for all articles and rapid communications approximately one month prior to the publication date of the journal. Beginning with this issue of the *MRS Bulletin*, instead of the full text of each *JMR* abstract, only the title and author listing for each article appears in print. In addition to each title and author listing, a direct link through the MRS website is provided to view the abstract online. See *JMR Abstracts* on page 71 to view the change.

As *JMR* begins its 15th year of publication, the hard work and dedication of all the editors and the editorial staff at MRS Headquarters have positioned *JMR* to serve the international materials research community as its leading archival journal. Members of the materials community are urged to submit their research findings to *JMR* for publication.

ROBERT P. FRANKENTHAL
Editor-in-Chief
Journal of Materials Research

Undergraduate Materials Research Initiative Funds 40 Projects

In the second year of the Materials Research Society's Undergraduate Materials Research Initiative (UMRI), coordinated by the MRS Academic Affairs Committee, 40 undergraduate student projects have been chosen to receive a \$1,000 grant each to support the students' materials-related projects. MRS also presented Honorable Mentions. Beth Stadler of the University of Minnesota and chair of the Academic Affairs Committee said that the number of awards has doubled from

last year's. The award recipients for 1999 and 2000 will be acknowledged at the 2000 MRS Spring Meeting in San Francisco when their posters are displayed at the Education Workshop symposium.

The UMRI program was designed to introduce undergraduate students to the excitement of discovery through research in materials science and engineering. Under the program, a grant of no more than \$750 is provided for the cost of a moderate research project. An additional

award of \$250 is payable directly to the undergraduate researchers upon completion of the project. Researchers from small institutions are particularly encouraged in order to attract promising students to materials research who might not have other funding available.

The awards for 2000 were announced in November 1999, and the list of recipients was posted at the 1999 MRS Fall Meeting in Boston.

Undergraduate Materials Research Initiative Grant Recipients

Oludurotimi Adetunji
Characterization of High Temperature Solution Growth of Cr₂+CdSe
Fisk University
Jean-Oliver Ndap, Advisor

Daniel Allen
Blend-Based Photovoltaic Devices
Cornell University
George Malliaras, Advisor

Melinda Allen
Materials Analysis with Rutherford Backscattering Spectrometry
Colorado School of Mines
Uwe Greife and Peter Sutter, Advisors

Ilke Arslan
Developing an Atomic Scale Understanding of the Structure Property Relationships of Dislocation Cores in GaN
University of Illinois, Chicago
Nigel D. Browning, Advisor

Scott Barry
Investigation of a New Four-Layer Ruthenium-Based Cuprate, Ru₂LnSr₂Ln'Cu₂O₁₁ (Ru-2312) (Ln = Lanthanide)
Beloit College
George Lisensky, Advisor

Elvin Beach
Investigation of the Effects of Relative

Humidity Level on Adhesion Forces between Pharmaceutical Powders and Storage Surface Materials using Atomic Force Microscopy
Michigan Technological University
Jaroslav Drelich, Advisor

Douglas Burnett
Pulse Plating of Ultrathin-Layered Magnetic Films
Washington State University
KNona C. Liddell, Advisor

Blaine Butler
Influence of Substrate Surface Chemistry on the Binding of DNA-RecA Protein Complexes

James Madison University
Brian H. Augustine, Advisor

Kerianne Cullen
DNA Detection using Colloidal Gold Nanoparticles: Toward near Patient DNA Diagnostics
Virginia Commonwealth University
Anthony Guiseppi-Elie, Advisor

Niall Donnelly
Measurement of Electromechanical Strain in PMN-PT Thin Film Structures
Queens University, Belfast
J.M. Gregg, Advisor

Undergraduate Materials Research Initiative Grant Recipients *continued*

- Rebecca Dylla**
Spatiotemporal Control of Nanocrystal Self-Assembly
University of Texas
Brian A. Korgel, Advisor
- Ryan Evans**
Asymptotic Model of an Inductively Coupled Plasma CVD System
University of Akron
Edward A. Evans, Advisor
- Obiefune Ezekoye**
Mechanical and Elastic Properties of Carbon Infiltrated Silicon Oxycarbide Cellular Ceramics
Pennsylvania State University
John R. Hellmann, Advisor
- Damon Farmer**
Topographical and Electrical Characterization of the SiO₂/SiC Interface: Applications to Power Electronics
Vanderbilt University
Leonard C. Feldman, Advisor
- Philip Flammer**
Modeling the Electric Field in Near-Field Scanning Optical Microscope
Colorado School of Mines
Reuben Collins, Advisor
- Lisa Friedman**
Elastic and Mechanical Properties Characterization of Fiber Composites Fabricated using a Novel Polymer Infiltration Process
Pennsylvania State University
John R. Hellmann, Advisor
- Cody Friesen**
Creation of Quantum-Dot Structures in SiO₂
Arizona State University
James B. Adams and Karl Sieradzki, Advisors
- Peter Giunta**
Fundamental Properties of Graphite Layer Edge States
Seton Hall University
Stephen P. Kelyt, Advisor
- Joshua Goldberger**
Synthesis and Characterization of New Vanadium Double Perovskites
Ohio State University
Pat Woodward, Advisor
- Kim Goodwin**
Systematically Derived Multifunctional Nanostructures in Multicomponent Block Copolymer Blends
North Carolina State University
Richard J. Spontak, Advisor
- Keith Hampton**
Systematically Derived Multifunctional Nanostructures in Multicomponent Block Copolymer Blends
North Carolina State University
- Rizal Fajar Hariadi**
Mechanically Enhanced Single-Layer Deposition of Brushite under Supersaturated Solution by Atomic Force Microscopy Tip
Washington State University
J. Thomas Dickinson, Advisor
- Joel Hayes**
Creation of Quantum-Dot Structures in SiO₃
Arizona State University
- Margaret Horton**
In Situ Study of the Adsorption and Photopolymerization of Styrene on a Copper Surface for Corrosion Resistance and Wire Connection Applications
Purdue University
Jochen Lauterbach, Advisor
- Bradley Kempton**
Search for Thermoelectric Materials in Pentatelluride Systems at Lower Temperatures (T < 273 K)
University of Idaho
David N. McIlroy, Advisor
- Jon Kennedy**
Modeling Electron States in Semiconductor Nanostructures
Worcester Polytechnic Institute
Lok C. Lew Yan Voon, Advisor
- Heather Lynch**
Characterization of a Kondo Box in a Chromium-Doped Aluminum Nanoparticle
Princeton University
Lydia L. Sohn, Advisor
- Mathew Maye**
A Novel Approach Toward Size and Shape Manipulation of Thiolate-Encapsulated Metallic Nanoparticles
State University of New York, Binghamton
Chuan-Jian Zhong, Advisor
- Melissa McCartney**
Synthesis, Characterization and Applications of Potassium Manganese Oxides as Cathode Materials in Lithium and Alkaline Cells
Binghamton University
M. Stanley Whittingham, Advisor
- Jessica McChesney**
Growth Study of Fe_xZn_{1-x}F₂ Thin Films
West Virginia University
David Lederman, Advisor
- Natalia Melcer**
Microporous Solids Based on Trigonally Symmetric Organic Ligands
University of Calgary
George Shimizu, Advisor
- Virginia Miller**
Synthesis and Study of New Transition Metal Nitrides from Metal Cation Loaded Emulsion Polymers
Rider University
Feng Chen, Advisor
- Elizabeth Perepezko**
Microstructural Changes in Human Cortical Bone under the Effects of Gamma Radiation Sterilization
Case Western Reserve University
Clare Rinnac, Advisor
- Rebekah Policoro**
Use of Atomic Force Microscopy to Analyze the Microstructure of Nano-scale Intermetallic Matrix Composites
Michigan Technological University
Donald Emil Mikkola, Advisor
- Michelle Prevot**
Fabrication Process for a Micro-reaction Device
Louisiana Tech University
Ronald Besser, Advisor
- Anish Priyadarshi**
Modeling Defect Concentrations and Silicon Activation in GaAs for TCAD Applications
India Institute of Technology
Deepak Gupta, Advisor
- Connie Rossini**
Biodegradation of Polyhydroxyalkanoates (PHAs) using In Situ Atomic Force Microscopy
James Madison University
Brian H. Augustine, Advisor
- Krishanu Saha**
Effects of Adhesion and Stacking Fault Energy on the Thermomechanical Behavior of Thin Copper Films Passivated with Metal Nitrides
Cornell University
Shefford P. Baker, Advisor
- Andrew Skolnik**
The Formation of Copper Oxide Thin Films from Copper Acetate using Chemical Vapor Deposition (CVD)
James Madison University
Thomas C. DeVore, Advisor
- Freddie Sng Lai Yong**
Scratch Testing of Dual-Layer Carbon Overcoat
National University of Singapore
Thomas Liew, Advisor
- Amy Stacy**
Analysis of Protein Adsorption of PEG Covered Silica Surfaces by Fluorescence Microscopy
University of California, Santa Barbara
Jacob Israelachvili, Advisor
- Matthew Wisnioski**
PLD of Ni₂Si on SiC for High Temperature Semiconducting Devices
Johns Hopkins University
James Brian Spicer, Advisor

Undergraduate Materials Research Initiative Honorable Mentions

- Amir Alam**
Design and Characterization of a Microporous Thermosetting Copolyester
University of Illinois at Urbana-Champaign
Kun Xu, Advisor
- Yvonna Aratyn**
Raman Analysis of Silicon and Germanium after High-Temperature Hardness Tests
University of Illinois, Chicago
Yury Gogotsi, Advisor
- Empress Arthur**
NMR Relaxation Times in Manganese Perovskites
Norfolk State University
N. Noginova, Advisor
- Deanna Augsburger**
Zinc-Annealed Zinc Selenide at Controlled Pressures: Determination of Gibbs Free Energy of Formation of Zn Vacancy and the Entropy Constant
University of Alabama, Huntsville
Ching Hua Su, Advisor
- Mikhail Avrekh**
Electron Emission Properties of Directly Deposited Carbon Nanotubes
Lawrence Berkeley National Laboratory
Ian C. Brown, Advisor
- Carmen Beildeck**
Investigation of the Thermochromic Properties of Poly(3-n-alkylthiophene)s
University of Rhode Island
Brett Lucht, Advisor
- Seann Bishop**
Titanium Substitution in Ga_{0.2-x}In_{1.2x}Sn_{n-4}O_{2n-2} Tunnelled Intergrowth Structures
Alfred University
Doreen Edwards, Advisor
- David Bussian**
High Speed MAS ²⁰⁷Pb NMR of [Pb_xSr_{1-x}]TiO₃
University of Nebraska
Gerard S. Harbison, Advisor

Undergraduate Materials Research Initiative Honorable Mentions *continued*

- Christopher Butler**
Design and Construction of an Apertureless Near-Field Microscopy
University of Pittsburgh
Jeremy Levy, Advisor
- Gianguido Cianci**
A New Type of Glass?
University College Dublin
K.A. Dawson, Advisor
- Jared Cnaidalka**
The Chemistry and Physics of Ruthenate Cuprates
University of Houston
C.W. Chu, Advisor
- Claire Cohen**
Robust Porous Organic Solids
University of Massachusetts
D. Venkataraman, Advisor
- Andrew Deal**
An Investigation of Spinneret Wear in Synthetic Fiber Processing
University of Virginia
Doris Kuhlmann-Wilsdorf, Advisor
- Cindi Dennis**
The Synthesis and Analysis of Magnetic Schiller Layers
Carnegie Mellon University
Sara A. Majetich, Advisor
- Nicole Erdman**
Using Nanoparticles as a Sintering Aid for Forming Solder Joints
Virginia Commonwealth University
Mark A. Palmer, Advisor
- Christie Garner**
Properties of Polycrystalline ZnTe Ion-Implanted with N: Applications for Photovoltaic Cell Back Contact
Colorado School of Mines
Uwe Greife and Tim R. Ohno, Advisors
- John Genthner**
Optimization of Kelvin Probe Measurement
University of Virginia
S. Ray Taylor, Advisor
- Melvin Gottschalk**
Synthesis of Microstructurally Textured Ceramics from Coal Combustion By-Products
Pennsylvania State University
John R. Hellmann and Barry E. Sheetz, Advisors
- Tobias Hanrath**
Growth and Characterization of Ultrahard Nitrides by Chemical Vapor Deposition
University of Tulsa
Saibal Mitra, Advisor
- Jeffrey Hanson**
Chondrocyte Seeded Chitosan Scaffolds for Cartilage Repair
Johns Hopkins University
Carmelita G. Frondoza, Advisor
- Jessica Hanwacker**
Evaluation of Tissue Engineered Cell Seeded Scaffolds by Scanning Electron Microscopy
Johns Hopkins University
Carmelita G. Frondoza, Advisor
- Justin Hartman**
Demonstration of Growth of Ultrahard Nitrides by Microwave-Assisted Chemical Vapor Deposition
University of Tulsa
Saibal Mitra, Advisor
- Suk-Yeon Hwang**
Synthesis of High-Density Bulk Metallic Glass-Forming Alloys: A Hafnium-Based Bulk Metallic Glass
Johns Hopkins University
T.C. Hugnagel, Advisor
- Jacob Jokisaari**
Deposition of Hydroxyapatite Coating on Porous Titanium Metal by Electrodeposition Technique
University of Idaho
Sarit B. Bhaduri, Advisor
- Emily Klein**
Measuring Viscous Flow in Polymeric Nanostructures
Cornell University
Jack Blakely, Advisor
- Kevin Landmark**
Monte Carlo Simulation of Diamond-Cubic (111) Surfaces: Is There a Preroughening Transition?
Michigan Technological University
John A. Jaszczak, Advisor
- Leandro Liborio**
Optical and Microstructural Characterization of PZLT Films Made by Chemical Solution Deposition
Laboratorio de Materiales Ceramicos
Oscar De Sanctis, Advisor
- Sean McWharther**
Large-Scale Synthesis of $\text{Eu}_{14}\text{MnSb}_{11}$
University of California, Davis
Susan M. Kauzlarich, Advisor
- Leena Nakana**
Surface Modification of Expanded Poly(tetrafluoroethylene) (e-PTFE) Membranes with a Collagen Mimetic Peptide for Use in the Design of Extracorporeal Liver-Assist Devices
University of California, San Francisco
Rajendra S. Bhatnagar, Advisor
- Alexandra Nolan**
Spectral Variants of Green Fluorescent Protein using Error-Prone Polymerase Chain Reaction and DNA Shuffling
AFRL/MLPJ
Morley Stone, Advisor
- Bret Oltmans**
Correlating Hardness of NiTi Powder Particles, Prestrain, and Residual Strain Imparted by a Constraining Epoxy Matrix
Rochester Institute of Technology
S.K. Gupta, Advisor
- Alexander Osadchy**
Synthesis and Raman Estimation of Mechanical Characteristics of Single-Wall Carbon Nanotubes and Their Compounds with Polymers
M V Lomonosov Moscow State University
Elena Obraztsova, Advisor
- George Patounakis**
Evaluation of the Piezoelectrical Properties of Epitaxial ZnO Thin Films: Applications to Multilayer SAW Devices
Rutgers, the State University of New Jersey
Yicheng Lu, Advisor
- Douglas Pete**
Aerosol Synthesis of Composite Oxide Particles: Bi-V-Mo-O Pigments
University of New Mexico
Timothy L. Ward, Advisor
- Cory Piette**
Laser Ultrasonic Monitoring of Titanium Alloy Microstructural Evolution
Johns Hopkins University
James Brian Spicer, Advisor
- Rebecca Price**
Nanoscale-Controlled Growth and Characterization of Epitaxial Thin Film Heterostructures of Ferromagnetic/Antiferromagnetic $\text{SrRuO}_3/\text{Sr}_2\text{YRuO}_6$
Duke University
Chang-Beom Eom, Advisor
- William Prisbrey**
Microwave-Activated Combustion Synthesis of BST Materials
University of Idaho
Sutapa Bhaduri, Advisor
- Michelle Roberts**
Characterization of Montmorillonite Nanocomposites
Colorado School of Mines
Don L. Williamson and Richard F. Wendlandt, Advisors
- Orhan Sancaktar**
Biocompatibility of Photosensitive Polyimides (PSPIs)
Ohio State University Research Foundation
Derek Hansford, Advisor
- Stephanie Scott**
Characterization of Montmorillonite Nanocomposites
Colorado School of Mines
- Yuki Shirosaki**
Biocompatibility due to Silicone by Surface Modifications
Okayama University
Akiyoshi Osaka, Advisor
- Stephen Spey**
Osteoblast Proliferation on Laser-Modified $\text{Ti}_6\text{Al}_4\text{V}$
Johns Hopkins University
James B. Spicer, Advisor
- Linda Stearns**
Lithium Silicide: A Low-Dimensional Silicon Material and Precursor to Thermoelectric Li-Bearing Semiconductor Clathrate
Arizona State University
Paul F. McMillan, Advisor
- Michael Stolfi**
In Situ Chemical Synthesis and Characterization of Biodegradable Hydroxylapatite-Polycaprolactone Composites
Carnegie Mellon University
Prashant N. Kumta, Advisor
- Matthew Taylor**
Synthesis, Structure and Magnetic Characterization of New Magnetic Charge Transfer Salts: Decamethylmetallocene 5-nitro-2,3-dicyano-1,4-naphoquinonides
University of Colorado
Gordon Yee, Advisor
- Jason Thomas**
The Effect of Thermal Treatment on Dispersion-Driven Morphology in Freely Standing Trilayer Polymer Films
University of Guelph
John R. Dutcher, Advisor
- Joseph Tracy**
Methods for Self-Assembly and Characterization of Dilute Magnetic Semiconductor Quantum Dots
University of California, Santa Barbara
Barbara
Geoffrey Strouse, Advisor
- Stephen Tsui**
The Chemistry and Physics of Ruthenate Cuprates
University of Houston
- Tobias Wheeler**
Improved Optical Limiting of Organic Dyes in Aligned Silical/Copolymer Composite Materials
University of California, Santa Barbara
Bradley F. Chmelka, Advisor
- Kenneth Wu**
Crack Nucleation and Propagation on the Microscale: An Experimental Analysis of Stress-Assisted Dissolution of Silica
Princeton University
Zhigang Suo and Winston O. Soboyejo, Advisors
- Joanne Yu**
Heterotopic Metal Complexes as Ligands for Diamondoid Arrays
University of Calgary
George Shimizu, Advisor
- Julie Zaborac**
What can Empirical Pair Potentials Tell Us about the Structure-Property Relationships at Grain Boundaries in Oxides?
University of Illinois, Chicago
Nigel D. Browning, Advisor