SYMPOSIUM JJ

The Undergraduate Curriculum in Materials Science and Engineering (MSE)
December 2-4, 2002

Chairs

Elliot P. Douglas
Univ of Florida
Oscar D. Dubon
Univ of California-Berkeley
Jacqueline A. Isaacs
Northeastern Univ
William B. Knowlton
Boise State Univ
M. Stanley Whittingham
SUNY-Binghamton

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Symposium Proceedings Series

*Invited paper

SESSION J11:
Chair: M. Stanley Whittingham
Monday Afternoon, December 2, 2002
Republic A (Sheraton)

1:30 PM *J11.1
LURING UNDERGRADUATES TO MATERIALS SCIENCE.
Gregory S. Farrington, Department of Materials Science and Engineering, Lehigh University, Bethlehem, PA.

2:00 PM *J11.2

2:30 PM *J11.3
MATERIALS SCIENCE EDUCATION AT KEIO UNIVERSITY: ADOPTING U.S. INSTRUCTION PRACTICES IN JAPAN.
Kohei M. Ide, Keio Univ, Dept of Applied Physics, Yokohama, JAPAN

3:00 PM BREAK

3:30 PM *J11.4
THE NEW MSE CURRICULUM AT THE OHIO STATE UNIVERSITY. Prahlad Gupta, Robert Snyder, The Ohio State University, Dept of Materials Science and Engineering, Columbus, OH.

4:00 PM *J11.5
TOWARDS A NEW UNDERGRADUATE CURRICULUM IN MATERIALS SCIENCE & ENGINEERING. Donald R. Sudoway, Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA.

4:30 PM *J11.6
THE CYMBALS AS AN INSTRUCTIONAL DEVICE FOR MATERIALS EDUCATION. Mary Anne White, Dept. Chemistry and Institute for Research in Materials, Dalhousie University, Halifax, CANADA.

4:45 PM *J11.7
THE NSF NSDL GREEN DIGITAL LIBRARY: GREEN'S FUNCTIONS RESEARCH AND EDUCATION ENHANCEMENT NETWORK. Laura M. Barcelo, Kent State University, Applied Linguistics Institute, Kent, OH; Adam C. Powell IV, Massachusetts Institute of Technology, Materials Science and Engineering Department, Cambridge, MA; Gregory M. Shreeve, Kent State University, Applied Linguistics Institute, Kent, OH; Vinod K. Tewary, National Institute of Standards and Technology, Materials Reliability Division, Boulder, CO.

SESSION J12:
Chair: Oscar D. Dubon
Tuesday Morning, December 3, 2002
Republic A (Sheraton)

8:30 AM *J12.1
EXCITEMENT IS THE KEY TO LEARNING ABOUT MATERIALS. John J. Meacholsky Jr., University of Florida, Department of Materials Science and Engineering, Gainesville, FL.

9:00 AM *J12.2
USING INTERACTIVE MULTIMEDIA TOOLS TO TEACH ANALYTICAL TECHNIQUES IN THE UNDERGRADUATE CURRICULUM. Karin Prüfer*, Klaus Pingel*, Jens Becker*, Horst-Peter Dressel*, Christof Reiner*, Marc Schlesser* and Hans-Jürgen Christ*; "Institute for Materials Technology, University of Siegen, GERMANY; *Institute of Physics, University of Siegen, GERMANY; *Institute of Inorganic Chemistry, University of Siegen, GERMANY.

9:15 AM *J12.3
TECHNIQUES FOR STUDYING SOLIDS: AN ON-LINE APPROACH TO JUST IN TIME LEARNING FOR MATERIALS CHARACTERIZATION. Wayne E. Jones Jr., Chao-Jen Tseng, and M. Stanley Whittingham, Department of Chemistry and Institute for Materials Research, State University of New York at Binghamton, Binghamton, NY.

9:30 AM *J12.4
MANAGING STUDENT GROUP PROJECTS IN AN INTRODUCTORY MATERIALS SCIENCE COURSE.
Jacqueline A. Isaacs, Northeastern University, Boston, MA.

9:45 AM BREAK

10:15 AM *J12.5
A TWO COURSE SEQUENCE FOR INTRODUCTION TO MATERIALS. Elliot P. Dubon, Univ of Florida, Dept of Materials Science and Engineering, Gainesville, FL.

10:30 AM *J12.6
USING INTERDISCIPLINARY EXAMPLES IN NANOTECHNOLOGY TO TEACH CONCEPTS OF MATERIALS SCIENCE AND ENGINEERING. Wendy C. Cronce, Department of Engineering Physics, University of Wisconsin-Madison, Madison, WI; Arthur B. Ellis, Department of Chemistry, University of Wisconsin-Madison, Madison, WI; George C. Lienksy, Department of Chemistry, Beloit College, Beloit, WI; S. Michael Condren, Department of Chemistry, Christian Brothers University, Memphis, TN; Amy Payne, Department of Chemistry, University of Wisconsin-Madison, Madison, WI; Ken Lux, Department of Engineering Physics, University of Wisconsin-Madison, Madison, WI.

SESSION J13: IN-ROOM POSTER SESSION
Chair: Oscar D. Dubon
Tuesday Afternoon, December 3, 2002
11:00 AM
Republic A (Sheraton)

J13.1
TOOLS FOR TEACHING NANOTECHNOLOGY CONCEPTS IN MATERIALS SCIENCE AND ENGINEERING. Wendy C. Cronce, Department of Engineering Physics, University of Wisconsin-Madison, Madison, WI; Arthur B. Ellis, Department of Chemistry, University of Wisconsin-Madison, Madison, WI; George C. Lienksy, Department of Chemistry, Beloit College, Beloit, WI; S. Michael Condren, Department of Chemistry, Christian Brothers University, Memphis, TN; Amy Payne, Department of Chemistry, University of Wisconsin-Madison, Madison, WI; Ken Lux, Department of Engineering Physics, University of Wisconsin-Madison, Madison, WI.

SESSION J14:
Chair: Jacqueline A. Isaacs
Tuesday Afternoon, December 3, 2002
Republic A (Sheraton)

1:30 PM *J14.1
MATERIALS SCIENCE IN A PROJECT-CENTERED INTERDISCIPLINARY COURSE BLOCK. Jonathan Skol, Hillary Berbeco, Robert Martello, Franklin W. Olin College of Engineering, Needham, MA.
1:45 PM J14.2 INTEGRATING MATERIALS SCIENCE INTO AN UNDERGRADUATE APPLIED PHYSICS CURRICULUM. Claudia Guerra-Velez, University of Puerto Rico at Humacao, Dept of Physics and Electronics, Humacao, PR; Fredy Zygmann, Yeshiva Univ, Dept of Physics, New York, NY.

2:00 PM J14.3 INSTRUCTIONAL LABORATORY EXERCISES FOR UNDERGRADUATE STUDENTS IN SOLID-STATE PHYSICS OR MATERIALS SCIENCE. Colin Englefield, Weber State University, Department of Physics, Ogden, UT; Roger Anthou, University of Utah, Department of Physics, Salt Lake City, UT.

2:15 PM J14.4 WEB-BASED DATA ANALYSIS AND FEEDBACK FOR GENERAL CHEMISTRY LABORATORY: IMPROVING ANALYSIS WITH TIMELY, DISTANCE FEEDBACK. Joseph F. Lomax, Debra K. Dilner, Melanie A. Teichert, U.S. Naval Academy, Chemistry Dept, Annapolis, MD.

2:30 PM J14.5 THE JUNIOR LABORATORY: A PLACE TO INTRODUCE BASICS AS WELL AS NEW FINDINGS. Luz J. Martinez-Miranda, O.C. Wilson Jr. and L.G. Salmans-Riba, Dept. of Materials and Nuclear Engineering, University of Maryland, College Park, MD.

2:45 PM Break

3:15 PM J14.6 INTRODUCING UPPER DIVISION NON-ENGINEERING STUDENTS TO MATERIALS. D.P. Bux, M.G. Norton, Washington State University, Mechanical and Materials Engineering, Pullman, WA.

3:30 PM J14.7 PUI/MRSEC COLLABORATION TO CREATE OPPORTUNITIES FOR WOMEN IN MATERIALS RESEARCH. Yekini Goldberg, Physics Department, Simmons College, Boston, MA; Michael Kaplan, Chemistry and Physics Department, Simmons College, Boston, MA; Leonard Salter, Chemistry Department, Simmons College, Boston, MA; George Malinowsky, Materials Science and Engineering Department, Cornell University, Ithaca, NY; Helene Schember, Neville Singh, Cornell Center for Materials Research (CCMR), Cornell University, Ithaca, NY.

3:45 PM J14.8 LABORATORY ON A COMPUTER. Mikhail I. Mendelev, David J. Skolovitz, Princeton Materials Institute & Dept. of Mechanical & Aerospace Engineering, Princeton University, Princeton, NJ; B.S. Bozhe, Moscow State Institute of Steel and Alloys, Moscow, RUSSIA.

SESSION J15: Chair: William B. Knowlton

Wednesday Morning, December 4, 2002

8:30 AM J15.1 PREPARING FOR SUCCESS. INDUSTRIAL SKILLS FOR MATERIALS ENGINEERS. Krasim J. Daskad, Recording Head Operations, Seagate Technology, Minneapolis, MN.

9:00 AM J15.2 CHANGING SKILL SET NEEDED FROM MS&E EDUCATION DUE TO EVOLUTION OF THE SEMI-CONDUCTOR INDUSTRY. Christopher S. Olsen, Applied Materials, TCG, Santa Clara, CA.

9:30 AM J15.3 UTILIZING INDUSTRIAL APPLICATIONS TO DESIGN AN ADVANCED UNDERGRADUATE CHEMISTRY LABORATORY. Jason J. Kechler and Yuzhao Li, Department of Chemistry Center for Advanced Materials Processing, Clarkson University, Potsdam, NY.

9:45 AM Break

10:15 AM J15.4 ATOMIC EXPLORER: A CASE STUDY TEACHING MATERIALS SCIENCE IN A VIRTUAL ENVIRONMENT. Frank Clime, Los Alamos National Laboratory, MIST-S, Structure and Property Relations, Los Alamos, NM; Pierre Doymer, The University of Arizona, Dept of Materials Science and Engineering, Tucson, AZ.

10:30 AM J15.5 APPLICATION OF CDIO METHODS IN THE MSE CURRICULUM. David Replincze, Massachusetts Institute of Technology, Dept of Materials Science and Engineering, Cambridge, MA.

10:45 AM J15.6 NON-DESTRUCTIVE TECHNIQUES FOR THE CHARACTERIZATION OF STRUCTURAL MATERIALS. Antonia Morozou, Nikolas P. Avdelidis, Eleni Aggelopoulou, NTi Technical University, Athens, Athens, GREECE.

11:00 AM J15.7 THE UNDERGRADUATE CORE COURSE IN THERMODYNAMICS IN MATERIALS SCIENCE AND ENGINEERING. Robert DeHoff, University of Florida, Dept. of Materials Science and Engineering, Gainesville, FL.

SESSION J16: Chair: Elliot P. Douglass

Wednesday Afternoon, December 4, 2002

1:30 PM J16.1 THE INTRODUCTORY MATERIALS SCIENCE AND ENGINEERING COURSE. William D. Callister, University of Utah, Salt Lake City, UT.

2:00 PM J16.2 A STUDIO VERSION OF AN INTRODUCTORY MATERIALS COURSE. Linda S. Schadler, J.B. Hadn, Materials Science and Engineering Department, Rensselaer Polytechnic Institute, Troy, NY.

2:30 PM J16.3 TEACHING GENERAL CHEMISTRY VIA A MATERIALS-CENTERED CURRICULUM: REINVigorating ENGINEERING EDUCATION. Donald R. Sadlowski, Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA.

2:45 PM J16.4 A MULTIFUNCTIONAL INTRODUCTORY MATERIALS SCIENCE COURSE: EMPHASIZING ENGINEERING AND ACHIEVING ACCREDITATION OBJECTIVES. K.C. Chen, L. Vanaja, and T. Orting, Materials Engineering Department, California Polytechnic State University, San Luis Obispo, CA.

3:00 PM J16.5 EFFECTIVE TEACHING IN THE INTRODUCTORY MATERIALS COURSE. R. Glinow, Department of Materials Science and Engineering, University of Wisconsin, Eau Claire, WI.