## MATERIALS RESEARCH SOCIETY SYMPOSIUM PROCEEDINGS VOLUME 909

## **Forum on Materials Science Education**

November 28 – December 2, 2005 Boston, Massachusetts, USA

Printed from e-media with permission by:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571 www.proceedings.com

ISBN: 1-55899-864-0

Some format issues inherent in the e-media version may also appear in this print version.

CAMBRIDGE UNIVERSITY PRESS Cambridge, New York, Melbourne, Madrid, Cape Town, Singapore, São Paulo, Delhi, Tokyo, Mexico City

Cambridge University Press 32 Avenue of the Americas, New York, NY 10013-2473, USA

www.cambridge.org

Materials Research Society 506 Keystone Drive, Warrendale, PA 15086 http://www.mrs.org

©Materials Research Society 2028

This publication is in copyright. Subject to statutory exception and to the provisions of relevant collective licensing agreements, no reproduction of any part may take place without the written permission of Cambridge University Press.

First published 2028

CODEN: MRSPDH
ISBN: 3/77: ; ; /: 86/2

Cambridge University Press has no responsibility for the persistence or accuracy of URLs for external or third-part Internet Web sites referred to in this publication and does not guarantee that any content on such Web sites is, or will remain, accurate or appropriate.

## Additional copies of this publication are available from:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571 USA Phone: 845-758-0400 Fax: 845-758-2634

Email: curran@proceedings.com Web: www.proceedings.com



## TABLE OF CONTENTS

1 Trans-Disciplinary Graduate and Refresher Programs for Education, Research and Training in the Fields of Nanoscience and Nanotechnology Akai, Hisazumi; Dino, Wison; Ichikawa, Satoshi; Itoh, Tadashi; Ogawa, Hisahito

5 Zoom in on Life: Using Biological Processes to Teach the Public About Nanotechnology

Greenberg, Andrew; Redwing, Ronald; Tinker, Beth; Wade, Maya

11 NSF NSDL Materials Digital Library & MSE Education

Bartolo, Laura; Glotzer, Sharon; Lowe, Cathy; Powell, Adam; Rajan, Krishna; Sadoway, Donald; Tewary, Vinod; Warren, James

17 Teaching What You Can't See: Museum Exhibits as a Bridge to Learning Materials Science

Castellini, Olivia; Crone, Wendy; Holladay, Carie; Krajniak, Paul; Theim, Terra; Walejko, Gina; Zenner. Greta

- 23 The Design, Implementation and Assessment of an On-Line, Open-Book Quizzing Environment for an Introductory Materials Science Course. Howell, Paul;Locklin, Ralph
- 42 Materials Engineering Education in Two New Engineering Degree Programs at the Centre for Photovoltaic Engineering

  Aberle, A.; Bruce, A.; Corkish, Richard; Cotter, J.; Green, M.; Sproul, A.; Wenham, S.
- 54 The Molecule, the Monomer and Materials Science: A Preliminary Report Howell, Paul
- 61 Crystal Structure Visualizations in Three Dimensions with Database Support

Moeck, Peter

67 Women in Materials: A Collaborative Effort Between Simmons College and the Cornell Center for Materials Research

Goldberg, Velda; Gurney, Richard; Johnson, Patrick; Kaplan, Michael; Malliaras, George; Schember, Helene; Soltzberg, Leonard

73 Scanning Force Microscopy in the Classroom *Zypman, Fredy* 

80 An Exploration of Microscopy for Educational Applications in the High School Classroom

Broadbridge, Christine; Cummings, Karen; Fitzsimmons, Ryan; Koekkoek, Robert; Lehman, Ann

86 The Future of Materials Undergraduate Programs: Can We Avoid **Extinction?** 

Vanasupa, Linda

94 Non-Traditional Assessments for New Learning Approaches: Competency Evaluation in Project-Based Introductory Materials Science Krumholz, Steven; Somerville, Mark; Stolk, Jonathan