# TABLE OF CONTENTS

1  **Cultivating Graduate Students: Techniques to Inspire Effective Research**  
   David Braun¹, Linda Vanasupa², Blair London², Kevin Kingsbury³, Heather Smith⁴

7  **Beyond the Classroom: Educating Undergraduates in Materials Science Research and Careers via the CPIMA SURE Program**  
   Marni Goldman¹, Charles G. Wade², Brenda E. Waller³, and Curtis W. Frank¹

13  **Teaching Undergraduate and Graduate Students Results From Recent Research As Part of a Class**  
    L. J. Martínez-Miranda, J. Kidder, J. Lloyd, R. J. Briber, O. Wilson, M. Al-Sheikly and L. G. Salamanca-Riba

21  **Enhancement of Undergraduate Materials Education through Research and Industry-Academia Interactions**  
    Asit K. Ray/Department of Chemical Engineering

27  **Industrial/Academic Internships at IBM-Almaden Under NSF Programs**  
    Charles G. Wade, Dolores Miller,

33  **The RET Program in the Center for Materials for Information Technology at the University of Alabama**  
    David E. Nikles and Garry W. Warren

37  **Scientists as Mentors to Science Teachers**  
    Fiona Goodchild and Carol Johnston

43  **Ways That Engineers Can Get Involved In Recruiting Future Materials Scientists and Engineers**  
    Stacy H. Gleixner

49  **Marquette’s Engineering Student Volunteer Outreach Program to Fifth Graders in the Public Schools, Choice Schools, and a Charter School in Milwaukee**  
    William E. Brower

55  **THE GENESIS SPACE PROBE AS A PLATFORM FOR MATERIALS EDUCATION**  
    Charles C. Hays

61  **The Materials World Modules Program: Incorporating Technology in Pre-College Education**  
    Matthew Hsu, Renee DeWald, Ken Turner
73 Evaluating Science Research Experience For Teachers Programs and Their Effects on Student Interest and Academic Performance: A Preliminary Report of an Ongoing Collaborative Study by Eight Programs
Jay Dubner & Samuel C. Silverstein

85 Microelectronics Process Engineering: A Non-Traditional Approach to MS&E
E. Allen, S. Gleixner, G. Young, D. Parent, Y. Dessouky, and L. Vanasupa

94 Innovative Curriculum on Electronic Materials Processing and Engineering
Jane P. Chang

100 Working with Industry and a Professional Organization to Offer Students a National Certification
John J. Schemmel, Frances Griffith, and Earl Glover

105 Materials Science and Engineering at Boise State University: Responding to an Industrial Need
Amy J. Moll, William B. Knowlton, David E. Bunnell, and Susan L. Burkett

111 Teaching General Chemistry Through Materials Science
Elliot P. Douglas

117 Dealing With Variation In Measurements & Processes: Experiments For An Undergraduate Laboratory
Linda Vanasupa, Heather Smith

123 A Curriculum Resource for Materials Science and Engineering Education - Elementary School Through College
James A. Jacobs and Alfred E. McKenney

131 Teaching Materials Characterization Techniques: An Interdisciplinary Approach to Develop Interactive Web-Based Multimedia Teaching/Learning Software
Karin Prüßner, Klaus Pingel, Horst-Peter Dressel, Jens Becker, Christof Reiner, Marc Schlosser, and Hans-Jürgen Christ

137 The Materials World Module Series and the Polymer Module: A Design-Oriented Approach to Teach Scientific Concepts to Grades 9-12 Students through Materials Science
SonBinh T. Nguyen, Jennifer K. Cocson, and Carol L. Colby

149 THE MACROSCOPE: A MACROSCOPE TOOL FOR VALIDATING MICROSCOPIC FORCE RELATIONSHIPS
Claudio Guerra-Vela, Fredy R. Zypman

156 Web Modules Linking Mechanics and Materials Science
David Roylance, C. H. Jenkins and S. K. Khanna
Incorporating Information Competence into Classes

Katherine C. Chen* and Paul T. Adalian Jr. ‡