Women in Engineering Conference

# Moving Beyond Individual Programs To Systemic Change

June 5-8, 1999 San Antonio, Texas

**Editor** 

Stephanie L. Blaisdell Director, WISE Program Arizona State University

| • |  |  |  |
|---|--|--|--|
|   |  |  |  |

## 1999 WEPAN NATIONAL CONFERENCE COMMITTEE

#### STEERING COMMITTEE

Jan Rinehart
Texas A&M University

Sherry Woods
The University of Texas – Austin

Theresa Wright
Texas A&M University

#### PROGRAM COMMITTEE

Jan Rinehart, Chair
Mary Anderson-Rowland
Barbara Bogue
Suzanne Brainard
Karen Butler
Jane Daniels
Lisa Frehill
Suzie Laurich-McIntyre
Betty Preece
Sherry Woods
Theresa Wright

#### NEWCOMER COMMITTEE

Barbara Bogue, Chair Connie Borowicz George Brewster Nede Fahr Suzie Laurich-McIntyre Betty Preece Suzanne Scheff

#### 10 YEAR CELEBRATION COMMITTEE

Carol Muller, Chair Jane Daniels Michele Fish Laura Herrick Pat Laughlin Claire Leblanc Susan Metz Harold Shields

MOVING BEYOND INDIVIDUAL PROGRAMS TO SYSTEMIC CHANGE 1999 WEPAN National Conference

#### WEPAN BOARD OF DIRECTORS

#### Susan Staffin Metz, President

Director, The Lore-El Center for Women In Engineering & Science Stevens Institute of Technology

### Cinda Sue Davis, Ph.D. Vice President

Director, Women in Science and Engineering University of Michigan

#### Judith W. McDonald, Secretary

Director, Women in Engineering The Ohio State University

#### Karan L. Watson, Ph.D.

Associate Dean of Engineering Texas A&M University

#### George Brewster

Manager, Recruiting & Temporary Employment Corning, Inc.

#### Kathleen W. Buechel

President, Alcoa Foundation

#### Jane Z. Daniels, Ph.D.

Director, WIE Programs Purdue University

#### Michele Fish

Director, Women's Programs in Engineering Cornell University

#### Debra A. Fowler

Workforce Planning Manager, Human Resources The Dow Chemical Company

#### Yolanda S. George, Ph.D.

Deputy Director, Directorate for Education and Human Resources American Association for the Advancement of Science

#### Brenda G. Hart, M.Ed.

Director, Minority and Women in Engineering Programs University of Louisville

#### Barbara B. Lazarus, Ph.D.

Associate Provost & Adjunct Associate Professor Carnegie Mellon University

#### Irene R. Mikawoz, P.Eng.

**Educational Consultant** 

#### Carol B. Muller, Ph.D.

Executive Director, MentorNet San Jose State University

#### Dorothy Patterson, P.E.

Project Coordinator, Capital Improvement Program Projects Beaumont Independent School Districts

#### Christine A. Riley, Ph.D.

Manager, End-User Driven Concepts
Intel Corporation

#### Linda Ryan-Doolittle

Manager, S/390 Software Development Business Operations IBM Corporation

#### Suzanne Scheff

Director, WIE Program University of Kentucky

#### Lewis E. Shumaker

Manager, College Relations and Recruitment
DuPont Company

#### Jill S. Tietjen, P.E.

Director, Women in Engineering Programs
University of Colorado, Boulder

#### Susan Wood, Ph.D.

Vice President and Director Westinghouse Savannah River Company

#### Doreen S. Yochum

Chief Administration Officer and
Vice President
Technology Management & Industry Relations
AT&T Labs

MOVING BEYOND INDIVIDUAL PROGRAMS TO SYSTEMIC CHANGE 1999 WEPAN National Conference



MOVING BEYOND INDIVIDUAL PROGRAMS TO SYSTEMIC CHANGE 1999  $\widehat{\mathbb{W}}$ EPAN National Conference



MOVING BEYOND INDIVIDUAL PROGRAMS TO SYSTEMIC CHANGE 1999  $\widehat{W}$ EPAN National Conference

#### TABLE OF CONTENTS

| 1999 WEPAN National Conference Committee  |
|---|
| WEPAN Board of Directorsiii   |
| Conference Scenesv  |
| ODDINANG GEGGION  |
| OPENING SESSION   |
| Speaker Biographies   |
| Welcome Address Susan Staffin Metz  |
| The Absolute Imperative for Diversity in the Engineering Workforce William A. Wulf, National Academy of Engineering |
| PEDAGOGICAL STRATEGIES  |
| Moderator Brenda Hart   |
| CURRENT RESEARCH  |
| Moderator Jorja Kimball   |
| NEW CONTENC   |
| NEWCOMERS   |
| Moderator Betty Preece  |
| Mainstreaming Your Program: Experiences from the Field Barbara Bogue, Judy "JJ" Jackson                             |
| DEANS PANEL   |
| Moderator Karan L. Watson   |

| PROGRAM SUPPORT  |  |  |  |  |
|--|--|--|--|--|
| Moderator  |  |  |  |  |
| Suzanne G. Brainard  |  |  |  |  |
| 35 Suzanne G. Brainaid35   |  |  |  |  |
| Federal Government Perspectives on Diversity   |  |  |  |  |
| Margaret Chu, Arthur Bienenstock, Sue Kemnitzer37  |  |  |  |  |
|  |  |  |  |  |
| PRE-COLLEGE INITIATIVES  |  |  |  |  |
| W-J  |  |  |  |  |
| Moderator Votbleen Port  |  |  |  |  |
| Kathleen Bott41  |  |  |  |  |
| The United Technologies/Trinity College Engineering Initiative (UTCEI): A Proven Model for the Partnership of the Future |  |  |  |  |
| Christine Caragianis-Broadbridge, Danae L. Stoane  |  |  |  |  |
| Cimiotino Catagianis Bioadoridge, Danae L. Stoane43  |  |  |  |  |
| ISSUES IN INDUSTRY   |  |  |  |  |
| 1/ 1   |  |  |  |  |
| Moderator  Caral D. Malla  |  |  |  |  |
| Carol B. Muller51  |  |  |  |  |
| A Discussion of "Best Practices" in the IT Industry to Support and Retain Technical Women                                |  |  |  |  |
| Cathy Campbell, Elaine P. Laws, Shari H. Moore, Linda A. Scherr53  |  |  |  |  |
| COLLABORATIVE PROGRAMS   |  |  |  |  |
|  |  |  |  |  |
| Moderator  |  |  |  |  |
| Patricia Laughlin61  |  |  |  |  |
| Davidonino Multi Instituti. I D  |  |  |  |  |
| Developing Multi-Institutional Partnerships for Systemic Change  |  |  |  |  |
| Jamie Bacon, Jorja Kimball63   |  |  |  |  |
| The CIC WISE Initiative: The Value of Consortial Activity  |  |  |  |  |
| Jean E. Girves   |  |  |  |  |
|  |  |  |  |  |
| PROFESSIONAL DEVELOPMENT WORKSHOP  |  |  |  |  |
|  |  |  |  |  |
| Moderator  |  |  |  |  |
| Pam Henry73  |  |  |  |  |

MOVING BEYOND INDIVIDUAL PROGRAMS TO SYSTEMIC CHANGE 1999  $\widehat{\mathbb{W}}$ EPAN National Conference

| KEYNOTE SPEAKER   |  |  |  |  |
|---|--|--|--|--|
| "Gold-Collar" Professionals: A Breed for the New Century Sheila Tobias                          |  |  |  |  |
| PROFESSIONAL DEVELOPMENT WORKSHOP   |  |  |  |  |
| Moderator Dorothy G. Patterson85  |  |  |  |  |
| MULTIPLE INTEREST   |  |  |  |  |
| Moderator Arleen Jennings Anderson  |  |  |  |  |
| ACCREDITATION AND WIE PROGRAMS  |  |  |  |  |
| Moderator Irene Mikawoz   |  |  |  |  |
| ABET Engineering Criteria 2000: Interactions with Women in Engineering Programs Karan L. Watson |  |  |  |  |
| NEWCOMERS   |  |  |  |  |
| Moderator George Brewster   |  |  |  |  |
| GUEST SPEAKERS  |  |  |  |  |
| Perspectives on Systemic Change Martha Krebs, Anne C. Petersen                                  |  |  |  |  |

| WEPAN AWARDS CEREMONY   |
|---|
| Moderator Jane Zimmer Daniels117  |
| PROGRAM SUPPORT   |
| Moderator Debra Fowler  |
| PEDAGOGICAL STRATEGIES  |
| Moderator Sandra Cooper   |
| Active Learning Processes and Classroom Pedagogy: Those That Encourage Student Self-Empowerment and Those That Foster Assimilation of Physics Concepts  C. Jan Carpenter, Julie Anne Schuck |
| MENTORING PROGRAMS  |
| Moderator Suzie Laurich-McIntyre  |
| Reviewing the Start-Up Phase of Mentornet: Progress, Findings, Results, Lessons Learned Carol B. Muller, Peg Boyle Single, Stephanie J. Fox   |
| The Peer Advising Program Graduate Experience Project Debbie A. Taylor, Cinda-Sue Davis   |
| INNOVATIVE CURRICULA  |
| Moderator Michele Fish  |
| Inclusive Learning Communities at Texas A&M: Making Systemic Changes in the Classroom  James R. Morgan, Jan Rinehart  |

MOVING BEYOND INDIVIDUAL PROGRAMS TO SYSTEMIC CHANGE 1999  $\widehat{\mathcal{W}}$ EPAN National Conference

| MULTIPLE INTEREST   |
|---|
| Moderator Karen Butler157   |
| MODEL WIE PROGRAMS  |
| Moderator Suzanne Scheff  |
| Living-Learning Programs for Women in Science and Engineering: What Works and What Doesn't                                      |
| Cinda-Sue Davis, Russell Hathaway, Sally Sharp161   |
| Residential Programs for First-Year Women in Science and Engineering  Barbara S. Clark  |
| Small Groups for Students in Engineering: The Manual Janine K. Reklaitis  |
| DISCUSSION GROUPS   |
| Recruiting Women into Engineering Graduate School Christie Befort, Mary Aleta-White, Stephanie Blaisdell, Mary Anderson-Rowland |
| Do Women Have the Ability to Study Engineering? Do Good Students Leave Engineering?   |
| Kathy Belknap179  |
| Mentornet: A Dialogue with University Partners  Peg Boyle Single, Carol B. Muller, Stephanie J. Fox                             |
| A Model Program at Virginia Tech: The C-Tech <sup>2</sup> Program for High School Women Leslie Pendleton Graham191              |
| GUEST SPEAKERS  |
| Moderator Lewis Shumaker  |
| Systemic Change: What Does it Mean to Me?  Uma Chowdhry, Carol Dudley197  |

MOVING BEYOND INDIVIDUAL PROGRAMS TO SYSTEMIC CHANGE 1999  $\widehat{W}$ EPAN National Conference

| PROFESSIONAL DEVELOPMENT WORKSHOP   |
|---|
| Moderator   |
| Carrie Schade199  |
| Same Schade199  |
| Organizational Change: Challenges, Team Building, and Case Studies              |
| Nancy E. Algert, Karan Watson, Debra Fowler201                                  |
| PRE-COLLEGE STRATEGIES  |
| Moderator   |
|   |
| Mary Anderson-Rowland207  |
| Keys to Empowering Youth: Developing a Science and Technology Mentoring Program |
| Elizabeth Thompson, Corinna Lathan, Sandra Hanson, Cindy Dernay-Tervalon,       |
| Priva Rajendram, Cheryl Morris, Tao Peng209                                     |
| PROFESSIONAL DEVELOPMENT WORKSHOP   |
| 2 2201 AZAT WORKSHOT  |
| Moderator   |
| Judy "J.J." Jackson   |
| APPENDICES  |
| AFFENDICES  |
| A: WEPAN National Conference Participants217                                    |
| B: The Cradleboard  |
| C: Author Index. 239  |
| D: Organizational Index   |
|   |