

WOMEN IN ENGINEERING CONFERENCE
Increasing Enrollment and Retention

May 31 - June 2, 1992
The Capital Hilton
Washington, D.C.

CONFERENCE PROCEEDINGS

Editor

Cathy M. Deno
Purdue University
West Lafayette, Indiana

WOMEN IN ENGINEERING PROGRAM ADVOCATES NETWORK 1992 BOARD OF DIRECTORS



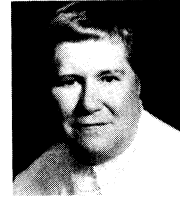
Jane Daniels
President



Susan Metz
Vice-President



Suzanne Brainard
Secretary



Betty Vetter
Treasurer



Mary Anderson



Marilyn Berman



Irene Bjorklund



George Brewster



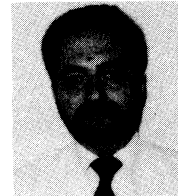
Deborah Grubbe



Gloria Hill



Judith McDonald



Guido Schlesinger



Harold Shields



John Vergelli



Karan Watson

IN APPRECIATION

The WEPAN Board would like to express their appreciation to these individuals who have been instrumental in insuring the success of the 1992 WEPAN Conference.



Patricia K. Bailey
WEPAN Conference Coordinator
Pasadena, California



Cathy M. Deno
Executive Assistant
WEPAN Member Services
Purdue University



Adrienne R. Karpov
Program Coordinator/Senior Counselor
Women in Engineering Initiative
University of Washington



Emily K. Wadsworth, Ph.D.
Assistant Director
Women in Engineering Programs
Purdue University

* * * * *

EDITOR'S NOTE

The papers included in this volume, unless otherwise noted, appear as they were prepared and submitted by the authors. No editing has been done to individual papers. Papers are presented in the order in which they appeared in the conference program. Indexes by author name and institution appear at the end of the volume.

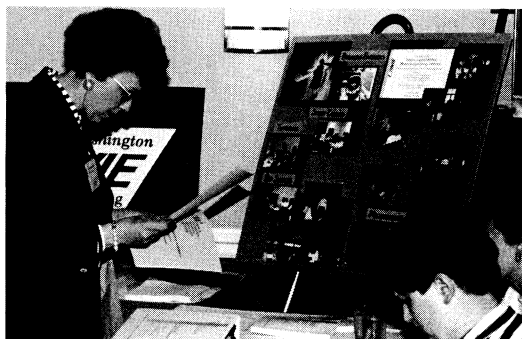
*W*OMEN IN ENGINEERING CONFERENCE: INCREASING ENROLLMENT AND RETENTION

1992 WEPAN National Conference

**PUBLIC AND PRIVATE ORGANIZATIONS
CONTRIBUTING TO THE
WOMEN IN ENGINEERING PROGRAM ADVOCATES NETWORK**

Alcoa Foundation
American Cyanamid
AT&T Foundation
Corning Incorporated
Du Pont Company
IBM Corporation
ICI Americas, Inc.
Intel Foundation
Mobil Exploration & Producing U.S. Inc.
NASA
National Science Foundation
Polaroid Foundation
Purdue University
Stevens Institute of Technology
Union Carbide Corporation
United Technologies Corporation
University of Washington
Westinghouse Foundation

1992 CONFERENCE PHOTOS



A conference participant gathers information from the Resource Room.



Carol Hollenshead from the University of Michigan makes her presentation during the workshop on New Research Findings to Support and Direct Women in Engineering Programs.



Dr. Guangming Zhang from the University of Maryland presents a workshop on Experiences of Engineering Design for High School Women.



Conference participants enjoy breakfast and conversation.

TABLE OF CONTENTS

WEPAN Board of Directors	i
In Appreciation	ii
Editor's Note	ii
WEPAN Contributors.	iii
1992 WEPAN Conference Photos .	iv

SUNDAY, MAY 31

Plenary Session I

<i>What Makes Engineering and Science Hard</i> Sheila Tobias.	3
---	---

MONDAY, JUNE 1

Plenary Session II

<i>Is the Global Corporate World Ready for Women Engineers--What Can We Do?</i> Doreen S. Yochum.	11
---	----

New Research Findings to Support and Direct Women in Engineering

<i>Academic Climate, Intervention and Institutional Change: Women in Science, Mathematics and Engineering</i> Carol Hollenshead.	19
<i>Beyond Anecdote: Research on Women in Engineering</i> Barbara Lazarus , Indira Nair & Claire Palmgren	23

Increasing Enrollment and Retention: A Dean's Forum

<i>Women in Engineering (WIE) Initiative</i> J. Ray Bowen & Neil Uhlman	29
<i>On the Professional Education of Engineers</i> M. Lea Rudee	35
<i>Recruitment and Retention of Women in Engineering: A Small College Perspective</i> Stuart G. Walesh	39

Sloan Foundation Initiatives at Cornell, Purdue and University of Washington

<i>Sloan Foundation Initiatives at Cornell University</i> Michele D. Fish	47
<i>The Freshman Intervention Program at the University of Washington</i> Sima Hashemifar, Nicole Meckel & Suzanne Brainard	53

<i>Sloan Foundation Initiative at Purdue University</i> Emily M. Wadsworth	59
---	----

Experiences of Engineering Design for High School Women

<i>Experiences of Engineering Design for High School Women</i> Guangming Zhang & J. W. Dally	67
--	----

Gathering Women Graduate Students

Gathering Women Graduate Students

Anne Meixner
& Patricia Laughlin 75

Educators, Employers and Engineers Design New Bridges for Women in Engineering

Educators, Employers and Engineers Design New Bridges for Women in Engineering

Jeanne E. Inch 83

Dimensions of Diversity in Engineering Education

Diversity in the Engineering Environment

Betty M. Vetter. 91

Diversity in Engineering Education

Indira Nair 97

Activities to Encourage Pre-College Students to Study Engineering

Activities to Encourage Pre-College Students to Study Engineering

Susan Staffin Metz 103

Features of Exemplary Programs that Attract Young Minority Women to Engineering and Science

Defining Features of Exemplary Programs that Attract Young Minority Women to Engineering and Science

Rachelle Heller
& C. Dianne Martin 111

WEPAN Annual Business Meeting

WEPAN Annual Business Meeting (see Appendix F for minutes)

The Status of Women in Science and Engineering: A Look at Some Statistics

Margrete S. Klein 119

T U E S D A Y , J U N E 2

WEPAN Regional Meetings

WEPAN Regional Meetings

(see Appendix G for minutes)

Students Mentoring Students: Recruiting and Retaining Women in Engineering and Science

Students Mentoring Students: Recruiting and Retaining Women in Engineering and Science

Linda Deneen
& Dianne Dorland 127

Women in Engineering Programs Abroad: An International Forum

Women in Engineering: More Than Just Numbers

Monique Frize
& Jeanne Inch 135

The New Zealand Experience: We've Come A Long Way

Liz Godfrey 141

Ecole Polytechnique Feminine, an International Engineering School for Women in France

Gertrud Humily 147

**Federal Government Funding
Priorities for Engineering
Education Into the 1990s**

NASA
Robert W. Brown155

**Designing a Workplace to
Maximize Effectiveness of
Women in Engineering: A
Work and Family Perspective**

*Transforming the Organization:
Women as the Key Resource*
Bruce Metz165

**Developing a Women in
Engineering Program**

*Women in Engineering . . . A
Winning Combination Program*
Kathleen J. Ganster177

*The Women Engineering Programs
at Oklahoma State University: The
First Year*
Karen A. High183

**Admission of Women Into
Undergraduate Engineering
Schools: An Insider's View**

*Admission of Women into
Undergraduate Engineering
Schools: An Insider's View*
Marilee Jones191

**Creating the "Perfect" Women
in Engineering Program**

*Designing the "Perfect" Women in
Engineering Program*
Jane Z. Daniels195

The How Tos of Grant Writing

*Proposal Preparation for Women in
Engineering*
Suzanne G. Brainard205

Plenary Session III

*Some Realities of Being Faculty
Women in the '90s*
Irene C. Peden213

APPENDICES

- A. Indexes
 - by Author A1
 - by Institution/Company.... A3
- B. 1992 WEPAN Conference
Participants B1
- C. Catalog of Resource Materials for
Women in Engineering
Programs
 - Introduction and Table of
Contents C1
- D. 1992 WEPAN Conference Audio
Tapes
 - List and Mail Order Form ... D1
- E. WEPAN Conference Proceedings
 - 1992 Order Form E1
 - 1991 Order Form E3
 - 1990 Order Form E5
- F. 1992 WEPAN Annual Business
Meeting Minutes F1
- G. 1992 WEPAN Regional Meetings
 - Western Meeting Minutes .. G1
 - Midwest Meeting Minutes .. G5
 - Eastern Meeting Minutes .. G9

