

North American Manufacturing Research Institution of SME announces

FOURTEENTH NORTH AMERICAN MANUFACTURING RESEARCH CONFERENCE AND ANNUAL MEETING



May 28-30, 1986 • University of Minnesota • Minneapolis, Minnesota, USA

in cooperation with:

Productivity Center, Institute of Technology and Continuing Education and Extension University of Minnesota

NAMRI SME

REGISTRATION AND GENERAL INFORMATION

CONFERENCE PROSPECTUS

The Fourteenth North American Manufacturing Research Conference (NAMRC XIV) is designed to provide a forum for the presentation and critical discussion of results of basic and applied research in metal working and related manufacturing, and manufacturing automation. The format of the conference is similar to that of NAMRC XIII at the University of California in Berkeley. The papers presented at this conference will describe work in the fields of metal forming, metal removal including grinding, machine tools, manufacturing systems, and controls. All papers presented at the conference are contained in the bound conference proceedings and represent work conducted in many of the renowned metal working and manufacturing research centers throughout the world.

The conference sessions will be conducted in an atmosphere that encourages discussion. We urge you to attend and contribute actively.

CONFERENCE LOCATION

The conference site is the Radisson University Hotel, 615 Washington Avenue SE, Minneapolis, Minnesota. The hotel is located in the heart of the University of Minnesota-Twin Cities campus.

REGISTRATION/ CANCELLATION FEES

\$225 (U.S.) advance registration; \$250 (U.S.) at-door registration fee on May 27 and 28. Fee includes three luncheons, the conference banquet, refreshments, and a bound copy of the conference proceedings. There will be no one-day registration fee nor any reduced fee for authors or session chairs.

Advance registration will be confirmed in writing. A refund, minus a \$25 cancellation fee, will be made to those cancelling their registration at least five working days prior to the conference. No refunds will be granted after May 21, 1986. Substitutions will be accepted at any time. For additional information contact Theresa Duty at

(612) 373-3188 before April 26, 1986 or (612) 625-5886 after April 26, 1986.

TO REGISTER

Complete and return the registration form provided. Checks/money orders should be payable to the University of Minnesota and mailed to: Registrar, Department of Professional Development, University of Minnesota, 315 Pillsbury Drive, SE, Minneapolis, MN 55455.

LODGING

Blocks of rooms for conference participants have been reserved at the Radisson University Hotel. Attendees should make their own reservations prior to May 6, 1986 by calling (612) 379-8888. To receive special conference room rates (\$58/single or double/plus tax), be sure to mention that you will be attending the North American Manufacturing Research Conference.

Following are lodging alternatives located within walking distance of the conference site.

University Cricket Inn
2407 University Avenue SE
Minneapolis, MN 55414
(612) 623-3999
\$38.95/single, plus tax
(5 minute walk)

Best Western University Inn
2600 University Avenue SE
Minneapolis, MN 55141
(612) 379-2313
\$44/single or double, plus tax
(5 minute walk)

Radisson Hotel Metrodome
1500 Cedar Avenue South
Minneapolis, MN 55454
(612) 333-4646
\$68/single, plus tax
(20 minute walk)

AIRPORT TRANSPORTATION

The Radisson University Hotel is served by Minneapolis-Suburban Airport Limousine Service, which travels every half-hour on weekdays between the hotel and the Minneapolis/St. Paul International Airport (one-way fee: \$6.50). Weekend reservations may be arranged by calling (612) 726-

6400. Taxis are readily available at the Minneapolis/St. Paul Airport. A one-way (approximately one half-hour) ride costs about \$15. Major car rental agencies are available at the airport also.

PARKING

Conference parking is available in the Harvard Street Ramp for 75 cents per hour (\$4.00 maximum/day). The Harvard Street Ramp is adjacent to the Radisson University Hotel. Valet parking is available for hotel guests.

WEATHER AND DRESS

Minnesota, land of 10,000 lakes, usually provides visitors pleasant weather during late May. The average monthly temperature is 68 degrees. Weather is usually sunny, but there can be periods of rain; bring an umbrella. The host hotel is located in the heart of the University of Minnesota campus, a busy pedestrian/bus area with many unique shops and restaurants. Walking shoes and a light jacket will be appropriate for this environment.

MESSAGES

Incoming messages for conference attendees will be taken by Radisson University Hotel staff at (612) 379-8888 and posted on a bulletin board near the conference registration area. Sessions will not be interrupted to relay messages.

DISCOUNTED TRAVEL

Special arrangements have been made with Northwest Airlines, a principal carrier serving the Twin Cities area, to assist conference participants. Northwest will guarantee a 35% discount on domestic, full day coach fares for individuals traveling round-trip on Northwest. To qualify, reservations must be made through Northwest's MEETING SERVICES DESK at 1-800-328-7747. You must mention the name of the conference, NORTH AMERICAN MANUFACTURING RESEARCH CONFERENCE, to obtain the 35% discount. (In some instances, greater discounts may be obtained with restricted availability.)

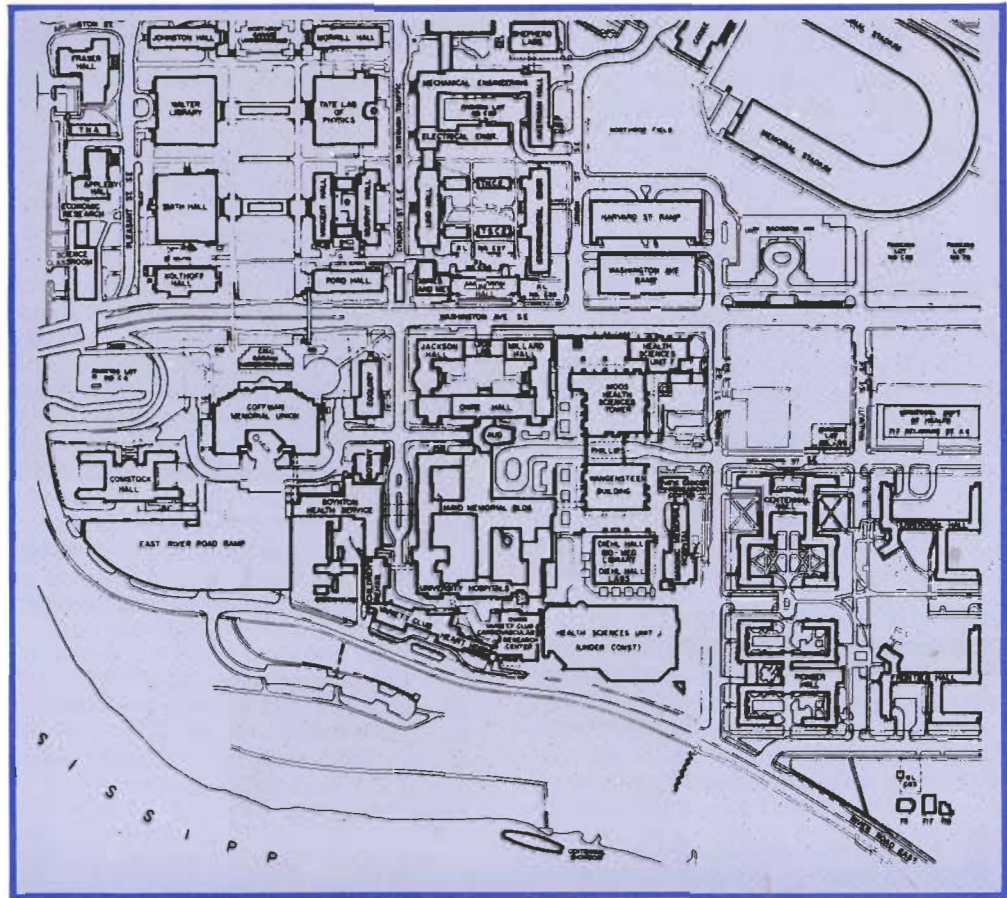
COMPANION ACTIVITIES

Those accompanying participants to the conference may take advantage of the many fine parks, restaurants, museums and shopping areas available in Minneapolis and St. Paul. Each city is accessible by public transportation which stops immediately in front of the Radisson University Hotel.

Several spouses will be available during the program to organize companion tours. Those interested should check the appropriate line on the registration form.

PROCEEDINGS

All registered conference participants will receive one bound copy of the NAMRC XIV proceedings at conference registration. Additional copies may be purchased at the conference or, after June 1, by mail order through the Society of Manufacturing Engineers, One SME Drive, P.O. Box 930, Dearborn, Michigan 48121 USA, (313) 271-1500, ext. 418. The cost per copy is \$55 for NAMRI/SME and SME members and \$65 for non-members.



TECHNICAL SESSIONS AND PROGRAM

Fourteenth North American Manufacturing Research Conference and Annual Meeting

May 28-30, 1986

TUESDAY, MAY 27

5:00-8:00 p.m.

Registration and Reception

Lobby, Radisson University Hotel, 615
Washington Ave., Minneapolis

6:00-9:00 p.m.

NAMRI/SME Board of Director's Meeting and Dinner

Radisson Board Room

WEDNESDAY, MAY 28

8:00-9:00 a.m.

Registration

Lobby, Radisson University Hotel
(donuts and coffee served)

9:00-10:00 a.m.

General Session

Little Theater, Coffman Memorial Union

Welcoming Address:

Ettore Infante

Dean, Institute of Technology
University of Minnesota, Minneapolis

Welcoming Remarks:

Richard J. Goldstein

Head, Department of Mechanical Engineering
University of Minnesota, Minneapolis

Introductory Remarks:

Inyong Ham

President, NAMRI/SME
Industrial and Management Systems
Engineering Department
Pennsylvania State University, University Park

Opening Address:

"Manufacturing Engineering Research:

Present Status and Future Needs"

Milton C. Shaw, Professor

Department of Mechanical and Aerospace
Engineering

Arizona State University, Tempe

10:00-10:30 a.m.

Break

Lobby, Radisson University Hotel

10:30 a.m. - 12:00 Noon

SESSION 1

A. Room A

Co-Chairmen:

J. Tlustý, University of Florida, Gainesville, FL

D. Durham, Oklahoma State University,

Stillwater, OK

1. "Face Milling with Silicon Nitride Based
Cutting Tools", *E.A. Lehtihet*,

Pennsylvania State University, University
Park, PA and *G.E. Kane*, Lehigh University,
Bethlehem, PA

2. "On the Geometry of End Milled
Surfaces", *T.S. Babin*, *J.W. Sutherland*,
and *S.G. Kapoor*, University of Illinois at
Urbana-Champaign, Urbana, IL

3. "Using Surface Roughness as a Wear
Criterion in High Speed Steel End-
Milling", *L. Evans*, National Bureau of
Standards, Gaithersburg, MD

B. Room B

Co-Chairmen:

B. Avitzur, Lehigh University, Bethlehem, PA

B. Allison, Alcoa Technical Center, Alcoa
Center, PA

1. "Establishment and Application of
Formulas to Predict the Cold-Forging
Load in Consideration of the Strain
History", *M. Toda* and *T. Miki*, Nippon
Steel Corporation, Sagami-hara, Japan

2. "Thermal Effects in Hammer Forging", *P.
Dadras*, *P.R. Burt*, and *B.C. Stone*,
Wright State University, Dayton, OH

3. "Plastic Flow Localization and Instability
in Metal Processing", *B.F. von Turkovich*

and *W.R. Steinhurst*, University of
Vermont, Burlington, VT

C. Room C

Co-Chairmen:

I. Ham, Pennsylvania State University,
University Park, PA

E.L. Barnett, University of Minnesota,
Minneapolis, MN

1. "Machine Tool Schedule in Job-Shop
Production Under Probabilistic
Conditions", *A. De Filippi* and *M.
Giannusso*, Politecnico di Torino, Torino,
Italy

2. "Hierarchical and Non-Hierarchical
Manufacturing Cell Control with
Dynamic Part-Oriented Scheduling", *N.
A. Duffie*, University of Wisconsin,
Madison, WI

3. "Tool Management Tasks in Flexible
Manufacturing Systems (FMS)", *P. G.
Ranky*, University of Michigan, Ann Arbor,
MI

12:00 Noon - 1:30 p.m.

Luncheon

1:30-3:00 p.m.

SESSION 2

A. Room A

Co-Chairmen:

N. Alberti, University of Palermo, Palermo, Italy
S. Ramalingam, University of Minnesota,
Minneapolis, MN

1. "Design and Calibration of Dynamometer
for CNC Lathe", *J. Hoffman* and *K.B.
Pedersen*, Technical University of
Denmark, Lyngby, Denmark

2. "General Analysis of Dynamometers for
Metal Cutting", *K.B. Pedersen* and *J.
Hoffman*, Technical University of Denmark,
Lyngby, Denmark

- G
3. "Development of an Instrumented Boring Bar Transducer", *G.M. Zhang* and *S.G. Kapoor*, University of Illinois at Urbana-Champaign, Urbana, IL

B. Room B

Co-Chairmen:

P. Christensen, Technical University of Denmark, Lyngby, Denmark
S. Kalpakjian, Illinois Institute of Technology, Chicago, IL

1. "Limit Analysis of Asymmetrical Rolling—Simulation of Deformation Behaviours of the Plate in Asymmetrical Roll-Gap", *M. Kiuchi*, University of Tokyo, Tokyo, Japan; and *S.-H. Hsian*, National Taiwan Institute of Technology, Taiwan
2. "A Sensor for Measuring Normal Forces with Through and Transverse Friction Forces in the Roll Gap", *D. Britten* and *J. Jeswiet*, IPSCO and Queen's University, Kingston, Ontario, Canada
3. "Production of Metal-Ceramic Composite Sheets by Mashy-State Rolling", *M. Kiuchi* and *S. Sugiyama*, University of Tokyo, Tokyo, Japan

C. Room C

Co-Chairmen:

A. De Filippi, Politecnico di Torino, Torino, Italy
G. Chryssolouris, Massachusetts Institute of Technology, Cambridge, MA

- G
- G
- E
1. "An Algorithmic Approach of Resource Allocation in Flexible Manufacturing Systems", *Y. Lee*, *D. Bray*, and *S.M. Wu*, University of Wisconsin, Madison, WI
 2. "A Proposal of Data Base Structure for Automatic Process Planning with Expert System", *M.-F. Chen* and *Y. Ito*, Tokyo Institute of Technology, Tokyo, Japan
 3. "Development of Product Model for Design and Manufacturing of Machine

Products", *K. Iwata* and *N. Sugimura*, Kobe University, Kobe, Japan

3:00-3:30 p.m.

Break

Lobby, Radisson University Hotel

3:30-5:00 p.m.

SESSION 3

A. Room A

Co-Chairmen:

W. DeVries, Rensselaer Polytechnic Institute, Troy, NY

L. Evans, National Bureau of Standards, Gaithersburg, MD

- G
- MR
- F
1. "Noncircular Cutting with Lathe", *M. Tomizuka*, *D. Dornfeld*, *M.S. Chen*, and *T.C. Tsao*, University of California, Berkeley, CA
 2. "Quasi-Isothermal and Adiabatic Deformation Parameters of 6061-T6 and 2017-T4 Aluminum Alloys and C-1045 Annealed Carbon Steel", *J.L. Brown* and *B.F. von Turkovich*, University of Vermont, Burlington, VT; *D.R. Durham*, Oklahoma State University, Stillwater, OK
 3. "A Re-examination of the Fingerprint Effect", *N.M. Werfalli* and *W.B. Rice*, Queen's University, Kingston, Ontario, Canada

B. Room B

Co-Chairmen:

K. Weinmann, Michigan Technological University, Houghton, MI

N. Rebelo, MARC Analysis Research Corporation, Palo Alto, CA

1. "A Computer-Aided Design System for Axisymmetric Deep Drawing Process", *K.R. Vemuri* and *P.S. Raghupathi*, Battelle Columbus Laboratories, Columbus, OH; and *K. Hoang-Vu*, Shultz Steel Company, South Gate, CA

2. "Automatic Design of Blocker Forging Dies", *K.R. Vemuri*, *P.S. Raghupathi*, Battelle Columbus Laboratories; and *T. Altan*, Ohio State University, Columbus, OH
3. "A Computer-Aided Application in Stretch Formability in Uniaxial Tension", *H. Frank*, *D.R. Hewitt*, and *G.L. Sheldon*, Washington State University, Pullman, WA

C. Room C

Co-Chairmen:

M. DeVries, University of Wisconsin, Madison, WI

M. Devenpeck, Clarkson University, Potsdam, NY

- E
- E
- G
1. "A Methodology for the Simultaneous Engineering of Products and Manufacturing Processes", *R.E. DeVor*, *S.G. Kapoor*, *R. Hayashida*, *G. Subramani*, University of Illinois at Urbana-Champaign, Urbana, IL; and *T. Lindem*, Ingersoll Milling Machine Company, Rock Island, IL
 2. "A Rule-Based System for Selection of Performance Criteria in Manufacturing", *G. Chryssolouris*, *K. Wright*, and *P. Soo*, Massachusetts Institute of Technology, Laboratory for Manufacturing and Productivity, Cambridge, MA
 3. "Frameworks for a Science of Manufacturing", *S.H. Kim*, Massachusetts Institute of Technology, Laboratory for Manufacturing and Productivity, Cambridge, MA

6:00 p.m.

Reception

Studio Restaurant

Minneapolis Institute of Arts

7:00 p.m.

Banquet

Studio Restaurant

Minneapolis Institute of Arts

Established in 1915, the Minneapolis Institute of Arts is rated as one of the top 10 art museums in the United States. Its collection consists of over 70,000 pieces of art, covering a broad spectrum which includes painting, sculpture, textiles, ceramics and decorative art. The Museum receives over half a million visitors a year. Transportation to the Minneapolis Institute of Arts from the Radisson University Hotel will be provided by bus.

THURSDAY, MAY 29

8:00-8:30 a.m.

Coffee

Lobby, Radisson University Hotel

8:30-10:00 a.m. **SESSION 4**

A. Room A

Co-Chairmen:

B.F. von Turkovich, University of Vermont, Burlington, VT

K. Ueda, Kanazawa University, Kanazawa, Japan

1. "Adaptive Control in Interrupted Turning Based on Analytical Prediction of Brittle Failure of Cutting Edge", *K. Ueda*, *A. Sugizono*, and *T. Sugita*, Kanazawa University, Kanazawa, Japan
2. "On a New Adaptive Control Strategy in Machining Based on Real Time Stress and Temperature Data", *A. Bagchi*, Ohio State University, Columbus, OH; *J.G. Chow*, GM Technology Center, Warren, MI; and *P.K. Wright*, Carnegie-Mellon University, Pittsburgh, PA
3. "Optimization of Multi-Pass Turning", *N. Alberti*, University of Palermo, Palermo, Italy

B. Room B

Co-Chairmen:

A. Male, Westinghouse Electric Company, Pittsburgh, PA

J. Jeswiet, Queen's University, Kingston, Ontario, Canada

1. "Analyses of Tool/Workpiece Interface Stresses in Metal Forming", *N. Bay*, Technical University of Denmark, Lyngby, Denmark
2. "Friction Along the Fixed Mandrel in the Hydrostatic Extrusion/Drawing of Tubes", *B. Lengyel*, Imperial College of Science and Technology and M.J.M.P. Marques, University of London, London, United Kingdom
3. "Mechanically Induced Cracks for Quality Control Standards", *M. Azrin* and *J.G. Cowie*, U.S. Army Materials Technology Laboratory, Watertown, MA

C. Room C

Co-Chairmen:

S.M. Pandit, Michigan Technological University, Houghton, MI

W. Zdeblick, Metcut Research Associates, Cincinnati, OH

1. "Fuzzy Cluster Analysis and Pattern Recognition Methods for Formation of Part Families", *J. Li*, *Z. Ding*, and *W. Lei*, Pennsylvania State University, University Park, PA
2. "Classification and Coding System for the Foundry Industry", *R. Lindeke* and *J. Rubinovitz*, Pennsylvania State University, University Park, PA

D. Room D

Co-Chairmen:

E. Salje, Technical University of Braunschweig, Germany

M. Shaw, Arizona State University, Tempe, AZ

1. "Physical Fundamentals of Brittle Nonmetallic Materials Abrasive Machining", *O.V.A. Maslov*, Kiev Polytechnic Institute, Kiev, USSR

2. "Dynamics of Grinding Wood and Wood Products", *R.J. Cosmano*, *E.J. Duwell*, *G.R. Abrahamson*, *G.H. Schlichting*, and *J.J. Gagliardi*, 3M Company, St. Paul, MN
3. "Feasibility of Coated Abrasives as a Replacement for Single-Point Cutting Tools in High-Speed Metal Cutting", *K.L. Wright* and *N.P. Suh*, Massachusetts Institute of Technology, Cambridge, MA

10:00-10:30 a.m.

Break

Lobby, Radisson University Hotel

10:30 a.m. - 12:00 Noon

SESSION 5

A. Room A

Co-Chairmen:

W. Rice, Queen's University, Kingston, Ontario, Canada

D. Dornfeld, University of California, Berkeley, CA

1. "A Practical Method of Dress-Free Laser Cutting", *M. Murakawa*, *H. Miyazawa*, *S. Sakai*, and *K. Ohkawa*, Nippon Institute of Technology, Miyashiro-Machi, Japan
2. "A New Machine Tool Concept Based on Lasers", *G. Chryssolouris*, *J. Bredt*, and *S. Kordas*, Massachusetts Institute of Technology, Cambridge, MA
3. "Optimization of Multistage Operations in Conventional and CNC EDM", *K.P. Rajurkar*, University of Nebraska, Lincoln, NE

B. Room B

Co-Chairmen:

T. Altan, Ohio State University, Columbus, OH

M. Kiuchi, University of Tokyo, Tokyo, Japan

1. "Upper-Bound Solutions for Several Metal Forming Processes", *B. Avitzur*, *J.C. Choi*, Lehigh University, Bethlehem, PA; and *B.M. Kim*, Pusan National University, Pusan, South Korea

2. "General Purpose Procedures for Elastic-Plastic Analysis of Metal Forming Processes", *N. Rebelo and T.B. Wertheimer*, MARC Analysis Research Corporation, Palo Alto, CA
3. "A Numerical Method for Simulating the Bulging of Superplastic Sheet Metal", *Z.J. Luo, N.C. Guo, and Q.Y. Gong*, Northwestern Polytechnical University, Xian, People's Republic of China

C. Room C

Co-Chairmen:

M. Donath, University of Minnesota, Minneapolis, MN

N. Duffie, University of Wisconsin, Madison, WI

1. "Trajectory Interpolators for SCAPA-Type Robot", *Y. Koren*, University of Michigan, Ann Arbor, MI
2. "Joint Error Analysis for Robot Design", *R.G. Fenton, B. Ben-Habib, and A.A. Goldenberg*, University of Toronto, Toronto, Ontario, Canada
3. "Design and Testing of an Extensible Ball Bar for Measuring the Positioning Accuracy and Repeatability of Industrial Robots", *N. Vira and K. Lau*, National Bureau of Standards, Gaithersburg, MD

D. Room D

Co-Chairman:

R. Cosmano, 3M Company, St. Paul, MN

R. Komanduri, General Electric Company, Schenectady, NY

1. "Modeling and Analysis of Surface Generation in Rotary Surface Grinding", *G. Sathayanarayanan, K.P. Rajurkar, and E. Salehi*, Lehigh University, Bethlehem, PA and University of Nebraska, Lincoln, NE
2. "Determination of Surface Characteristics Using Optical Grating Topography", *D.R. Axelrad, L. Kops, and*

M.K.R. Rao, McGill University, Montreal, Quebec, Canada

3. "Role of Abrasive and Workpiece Properties Relative to Surface Temperature and Residual Stress", *S. Ramanath and M.C. Shaw*, Arizona State University, Tempe, AZ

12:00 Noon - 1:30 p.m.

Luncheon

1:30-3:30 p.m.

SESSION 6

A. Room A

Co-Chairmen:

R. DeVor, University of Illinois at Urbana-Champaign, Urbana, IL

B. Klamecki, University of Minnesota, Minneapolis, MN

1. "Modeling Diamond-Turning Process with Acoustic Emission for Monitoring Application", *C.S. Pan and D.A. Dornfeld*, University of California, Berkeley, CA
2. "Characterization of Tool Wear and Breakage by Pattern Recognition Analysis of Acoustic Emission Signals", *E. Emel and E. Kannatey-Asibu, Jr.*, University of Michigan, Ann Arbor, MI
3. "Measurements of the Milling Forces Over a Wide Frequency Range", *J. Tlustý, D.Y. Jang, and Y.S. Tarnog*, University of Florida, Gainesville, FL
4. "On Tool Post Vibration Modeling for Tool Condition Identification", *J. Vogel, S. Ramalingam, and K. Stelson*, University of Minnesota, Minneapolis, MN

B. Room B

Co-Chairmen:

G. Lahoti, Timken Company, Canton, OH

W. Wilson, Northwestern University, Evanston, IL

1. "The Effect of Punch Shape on the Strain Distribution in Stretch Forming", *K.J. Weinmann, S.C. Biondich, and J.L. Duncan*, Michigan Technological University, Houghton, MI
2. "Strain Analysis of Hemispherical Punch Stretched Specimens of Aluminum", *J.C. Gerdeen, D.J. Staublin*, Michigan Technological University, Houghton, MI; and *J.M. Story*, Alcoa Technical Center, Alcoa Center, PA
3. "Effect of Deep-Drawing Conditions on Residual Stresses and Stress Corrosion Cracking of Sheet Metal", *A. Graber and K. Lange*, Universitat Stuttgart, Stuttgart, Germany
4. "Production of Thick Spur and Helical Gears by Warm Shaving", *M. Murakawa, N. Koga, S. Tanaka, and K. Ohkawa*, Nippon Institute of Technology, Miyashiro-Machi, Japan

C. Room C

Co-Chairmen:

Y. Koren, University of Michigan, Ann Arbor, MI

M. Martinez, RCA Corporation, Princeton, NJ

1. "Evaluation of a Multifingered Robot Grasp", *J.T. Feddema and S. Ahmad*, Purdue University, West Lafayette, IN
2. "A Modular Fixture for Prismatic Parts in an FMS", *J.J. Colbert, IBM, Charlotte, NC; R. Menassa and W.R. DeVries*, Rensselaer Polytechnic Institute, Troy, NY

D. Room D

Co-Chairmen:

E. Duwell, 3M Company, St. Paul, MN

R. Lindsay, Norton Company, Bridgeport, CT

1. "Machining of Alundum Grinding Wheels with Carbide and CBN Cutting Tools", *T. Matsuo, K. Tsukamoto, and N. Ueda*, Kumamoto University, Kumamoto, Japan

2. "Comparison of Grinding and Honing Process", *E. Salje, H. Mohlen, and M.V. See*, Institute for Machine Tools and Production Engineering, Technical University of Braunschweig, Braunschweig, Germany
3. "Hybrid Machining—Combination of Electric Discharge Machining and Grinding", *T. Aoyama and I. Inasaki*, Keio University, Yokohama, Japan
4. "Self-Tuning Control for Grinding and Honing Dimensional Compensation", *H.H. Yang and M.Y. Liu*, Xi'an Jiaotong University, Xi'an, People's Republic of China

3:30-3:45 p.m.

Break

Lobby, Radisson University Hotel

3:45 p.m.

Lab Tours: Mechanical Engineering Bldg. and Productivity Center

4:30 p.m.

Production Engineering Division Executive Committee Meeting

Dale Shepard Room, Campus Club, Coffman Union

5:00 p.m.

Mechanical Engineering/Productivity Center Reception

Terrace, Campus Club, Coffman Union

6:00 p.m.

NAMRI/SME Membership Meeting

Dale Shepard Room
Campus Club, Coffman Union

FRIDAY, MAY 30

8:00-8:30 a.m.

Coffee

Lobby, Radisson University Hotel

8:30-10:00 a.m.

SESSION 7

A. Room A

Co-Chairmen:

K. Lange, Universitat Stuttgart, Stuttgart, Germany

D. Hardt, Massachusetts Institute of Technology, Cambridge, MA

1. "Calculation of Local Surface Stresses in Drop Forging Using UBET", *Peter Chistensen*, Technical University of Denmark, Lyngby, Denmark
2. "ALPIDP—Modeling of P/M Forming by the Finite Element Method", *S.I. Oh*, Battelle Columbus Division, Columbus, OH, and *H.L. Geigel* AFWAL, Wright Patterson AFB
3. "Thermomechanical Processing by Continuous (Screw) Extrusion", *A.S. El-Gizawy*, Bradley University, Peoria, IL; and *J.A. Schey*, University of Waterloo, Kingston, Ontario, Canada

B. Room B

Co-Chairmen:

S. Kapoor, University of Illinois at Urbana-Champaign, Urbana, IL

L. Kops, McGill University, Montreal, Quebec, Canada

1. "Real Time Numerical Control System for Sculptured Surface Machining", *H. Suzuki, K. Yamazaki, T. Hoshi*, Toyohashi University of Technology; *H. Sekiguchi* and *A. Hayashi*, Toshiba Machine Company, Ltd., Toyohashi, Japan
2. "Mirror-Like Cutting of Ferrous Metals with CBN Tools", *M. Nishiguchi* and *M. Masuda*, Hitachi, Ltd., Tokyo, Japan
3. "Dynamic Analysis of Rotating Spindle-Bearing via FEM and DDS Methodology", *Y.B. Chen* and *S.M. Wu*, University of Wisconsin, Madison, WI

10:00-10:30

Break

Lobby, Radisson University Hotel

10:30 a.m. - 12:00 Noon

SESSION 8

A. Room A

Co-Chairmen:

S. Oh, Battelle Columbus Division, Columbus, OH

K. Stelson, University of Minnesota, Minneapolis, MN

1. "High Accuracy U-Bend Forming Under Die Control", *A. Yoshida* and *K. Kawaguchi*, Mitsubishi Electric Corporation, Awagasaki, Japan
2. "Closed-Loop Control of Sheet Metal Stability During Stamping", *D.E. Hardt* and *C.G.Y. Lee*, Massachusetts Institute of Technology, Cambridge, MA

B. Room B

Co-Chairmen:

K. Iwata, Kobe University, Kobe, Japan

D. Lee, Allied Automotive, Troy, MI

1. "Time Domain Approach to Multiple Input Modal Analysis", *D.W. Cho* and *S.M. Wu*, University of Wisconsin, Madison, WI; *K.F. Eman*, Northwestern University, Evanston, IL
2. "An Experimental Study of the Three-Dimensional Modal Dynamics of a Lathe Tool and Support System", *C. Torres, D. Frohrib*, and *S. Ramalingam*, University of Minnesota, Minneapolis, MN
3. "Identification of Receptances of Machine Tool Structure Under Actual Cutting Conditions", *S.M. Pandit* and *A.C. Okafor*, Michigan Technological University, Houghton, MI

12:00 Noon

Luncheon

Conference Ends

1985-86 NAMRI/SME BOARD OF DIRECTORS

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