Twenty-Ninth
North American
Manufacturing Research Conference

NAMRC XXIX
May 22-25, 2001
Gainesville, Florida

Hosted by
The University of Florida -
Machine Tool Research Center
System Automation and Mobility in Manufacturing Laboratory
Department of Mechanical Engineering
Dear Colleagues and Friends:

We are pleased to welcome you to the Twenty-ninth North American Manufacturing Research Conference (NAMRC). The Machine Tool Research Center, the System Automation and Mobility in Manufacturing Laboratory and the Department of Mechanical Engineering in the College of Engineering at the University of Florida in Gainesville, FL, are pleased to host this year’s conference on May 22-25, 2001. NAMRC is an established international forum for the presentation and critical discussion of research results and applications carried throughout universities and industry. This is the one conference where leaders in manufacturing research come together to exchange findings and leading edge technological information. Participation in NAMRC XIX provides its authors far-reaching recognition for their work, as well as yields valuable insight from other leaders in manufacturing research.

A total of 81 technical papers have been accepted by the Scientific Committee of the North American Manufacturing Research Institute of the Society of Manufacturing Engineers (NAMRI/SME) and will be presented at the conference by researchers from universities, research institutes, and industrial research laboratories located around the world. As a special highlight to this year’s event, and to honor the retirement of Dr. Jim Husty, one of the founding organizers, a special session of four invited lectures on Machine Tools will be presented. Reprints of these lectures will be provided to attendees in a special bound volume.

Join us at the welcoming reception and the conference Opening Ceremony that will feature a keynote address by Dr. Jim Husty, director of the University of Florida’s Machine Tool Research Center and graduate research professor. Special events will be made in respect for the recent loss of two of our manufacturing leaders, Hyong Ham and William B. Rice.

Each year, NAMRC attracts over 200 manufacturing research engineers and scientists, research and development managers, product designers and managers, design specialists, metallurgists, manufacturing managers, research professors, graduate students, research assistants, manufacturing educators, and industry representatives from around the world. It provides not only an excellent forum for information transfer, but also a first-rate opportunity for informal discussion and networking. We look forward to your participation in this important event, renewing acquaintance with those of you who are regular attendees at this conference, and to meeting many of you who will be attending for the first time. We believe that participation in NAMRC XIX will be both intriguing and beneficial experience for you.

Cordially,

Jim Husty
Chair

John K. Schueller, Co-Chair
Gloria J. Wiens, Co-Chair
John C. Ziegert, Co-Chair

NAMRC XIX Organizing Committee

What is NAMRC?

NAMRC is an international forum for the presentation and critical discussion of the results of basic and applied research in material forming, material removal, and manufacturing systems and controls. It is one of only a few events of its kind where technical innovations, new methods and applications of leading-edge technology from throughout the world are shared between manufacturing research, design, engineering, and production professionals from academia and industry. Because NAMRC takes place every year, the findings and breakthroughs presented here are topical and of current interest.

Why Should You Attend?

By attending NAMRC XIX, you will:

- Gain insight on the most recent developments in material removal and forming processes, automation and control of processes and systems, equipment accuracy and precision, and many other manufacturing-related topics.
- Participate in a dialogue between industry and academia on future needs for manufacturing processes and applications.
- Enhance your knowledge of alternative manufacturing processes and applications.
- Make valuable contacts with other leading manufacturing researchers and professionals.

About NAMRI/SME

The North American Manufacturing Research Institute of the Society of Manufacturing Engineers (NAMRI/SME) is an organization dedicated to manufacturing research and technology development. Its mission is to advance manufacturing engineering by promoting research and its application in industry.

Sponsorship

The NAMRC XIX Organizing Committee thanks the University of Florida, its College of Engineering, the Department of Mechanical Engineering and its Machine Tool Research Center, System Automation and Mobility in Manufacturing Laboratory, and Center for Intelligent Machines and Robotics, as well as the industrial sponsors for their sponsorship of this conference.

Conference Publication

Papers accepted for and presented at NAMRC XIX will be contained in the hardbound Transactions of the North American Manufacturing Research Institute of SME, Volume 29, 2001. Participants who have paid the registration fee will receive a copy at the time of registration. Additional copies may be purchased by contacting an SME Customer Service Representative at (313) 271-1500, ext. 1600 or (800) 733-4763.
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<thead>
<tr>
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<td>Tuesday</td>
<td>Registration and Breakfast Pre-function Lobby, University of Florida Hotel 7:30 - 8:30 a.m.</td>
<td>Board Room, University of Florida Hotel 8:30 a.m. - 5:30 p.m.</td>
<td>Registration and Welcoming Reception Outdoor Dining Area, University of Florida Hotel 5:30 - 9:00 p.m.</td>
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<td>NAMR/SME Board Meeting Board Room, University of Florida Hotel</td>
<td>NAMR/SME Banquet Century Ballroom, University of Florida Hotel</td>
<td>NAMR Banquet Century Ballroom, University of Florida Hotel 7:00 - 9:30 p.m.</td>
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<td>Welcoming Ceremony and Keynote Address Century Ballroom B &amp; C, University of Florida Hotel 8:30 - 9:30 a.m.</td>
<td>University of Florida Hotel 10:00 a.m. - noon</td>
<td>Laboratory Tours University of Florida, Mechanical Engineering 4:00 - 6:00 p.m.</td>
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<td>Concurrent Sessions University of Florida Hotel 10:00 a.m. - noon</td>
<td>Awards Luncheon and Banquet Century Ballroom A, University of Florida Hotel 12:00 - 1:30 p.m.</td>
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<td>Wednesday</td>
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<td>Thursday</td>
<td>Registration and Breakfast Pre-function Lobby, University of Florida Hotel 7:30 - 8:30 a.m.</td>
<td>NAMR/SME Executive Committee Meeting Board Room, University of Florida Hotel 8:00 a.m. - noon</td>
<td>NAMR/SME Member Meeting Hawthorne Room, University of Florida Hotel 1:30 - 3:30 p.m.</td>
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<td>Concurrent Sessions University of Florida Hotel 8:00 a.m. - noon</td>
<td>Lunch at University of Florida Hotel 12:00 - 1:30 p.m.</td>
<td>ASME MED Meeting Hawthorne Room, University of Florida Hotel 3:45 - 5:00 p.m.</td>
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<td>ASME MED Executive Committee Meeting Board Room, University of Florida Hotel 8:00 a.m. - noon</td>
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<td>Friday</td>
<td>Registration and Breakfast Pre-function Lobby, University of Florida Hotel 7:30 - 8:30 a.m.</td>
<td>ASME/IMCE 2001 Organization Meeting Board Room, University of Florida Hotel 10:00 a.m. - noon</td>
<td>NAMR Banquet Century Ballroom, University of Florida Hotel</td>
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**NOTE TO AUTHORS:** The Board Room of the University of Florida Hotel will be made available for press Wednesday 7:30 a.m. - 9:30 p.m. & 5:30 - 9:00 p.m.

*Preparation at the following times:*

**Thursday Noon - 6:30 p.m.**

**Friday 7:30 - 10:00 a.m.**
NAMRC XXIX Organizing Committee

CHAIRS
Jill Ihler, PhD
Machine Tool Research Center (MTRC) and the Department of Mechanical Engineering
University of Florida

CO-CHAIRS
John Scholtz, Ph.D
MTRC and the Department of Mechanical Engineering
University of Florida

Gloria Wams, PhD
Systems Automation and Mobility in Manufacturing (SAMM) Laboratory and the Department of Mechanical Engineering
University of Florida

John Ziegler, PhD, PE
MTRC and the Department of Mechanical Engineering
University of Florida

CONFERENCE PROGRAM COORDINATOR
Katie Ziemba
Department of Conferences
University of Florida

STUDENT ORGANIZING COMMITTEE
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MTRC and the Department of Mechanical Engineering
University of Florida

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University of Florida

McClary Santanian
MTRC and the Department of Mechanical Engineering
University of Florida

Robert Streibinger
SAMM and the Department of Mechanical Engineering
University of Florida

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University of Illinois at Urbana-Champaign

Robert Gao
University of Massachusetts

Maria Lichtman
University of Massachusetts

Emmanuel Onyia
University of Florida

David Bar
University of Florida

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University of Florida

Andrew Smith
University of Florida

McClary Santanian
University of Florida

Robert Streibinger
University of Florida

James A. Yoo
University of Illinois at Urbana-Champaign

Robert Gao
University of Massachusetts
Conference Site

The state's oldest, largest and most comprehensive public land grant university, the University of Florida is among the nation's most academically diverse public universities and has a long history of established programs in international education, research and service.

The University is located in Gainesville, Florida, the heart of the north central Florida highlands. Surrounded by lakes, woods and prairies and only 90 minutes away from the Atlantic beaches and the Gulf shores, University of Florida boasts one of the finest climates in the world. Disney World and the entire Orlando-Kissimmee entertainment complex is only 2 hours away by interstate and turnpike. You can fly into Orlando, rent a car, and drive up to the University and combine business with family pleasure.

In addition to various campus facilities, the University of Florida is also home to several research centers that focus their studies in the area of mechanical engineering. These facilities include:

- The Machine Tool Research Center (MTRC) - The Machine Tool Research Center at the University of Florida is well equipped with state-of-the-art machine tools and supporting equipment and instrumentation. Research is focused on manufacturing, machine design, metrology, structural dynamics, CAD/CAM, and control systems.

- The Center for Intelligent Machines and Robotics (CIMAR) - The Center continues to be a leader in research and development in the areas of mechanisms, autonomous vehicles, and intelligent machines.

- The System Automation and Mobility in Manufacturing Laboratory (SAMM) - In the System Automation and Mobility in Manufacturing Laboratory, research efforts are directed toward investigations of "compliant" operations of robotic systems, parallel kinematic machines (PKMs), micro-manipulators and their applications in automating manufacturing processes, MEMS and robotics in general. Focus is on the dynamics and controls aspects of these systems.

Facilities

Various sites and facilities have been chosen for NAMRC XXIX events. The brand new University of Florida DoubleTree Hotel and Conference Center will host a majority of NAMRC events including concurrent technical sessions and various luncheons and receptions. On Thursday night, a special reception will be held at the Florida Museum of Natural History and the Harriett Museum of Art, located one block from the University of Florida Hotel.

Special Activities

- Welcoming Reception - Held at the University of Florida Hotel in the Outdoor Dining area near the Conference Registration; Tuesday, May 22 from 5:30 - 6:00 p.m.
- Welcoming Ceremony and Keynote Address - Held at the University of Florida Hotel in the Century Ballroom A and C; Wednesday, May 23 from 8:30 - 9:30 a.m. Keynote address presented by Jeff Tusty, director of the Machine Tool Research Center at the University of Florida.
- NAMRUSME Awards Luncheon and Founders Lecture - University of Florida Hotel, Century Ballroom A; Wednesday, May 23 from 12:00 - 1:30 p.m.
- COMEC Meeting - Held in the Board Room at the University of Florida Hotel; Wednesday, May 23 from 1:30 - 5:30 p.m.
- NAMRC Banquet - Held in the Century Ballroom at the University of Florida Hotel; Wednesday, May 23 from 7:00 - 9:30 p.m.
- NAMRUSME Member Meeting - Thursday, May 24 from 8:45 - 5:00 p.m. in the Hawthorne Room at the University of Florida Hotel.
- ASME MED Member Meeting - Thursday, May 24 from 5:00 - 6:15 p.m. in the Hawthorne Room at the University of Florida Hotel.
- NAMRC Reception - Thursday, May 24 from 6:30 - 9:30 p.m. at the Florida Museum of Natural History and the Harriett Museum of Art.

Laboratory and Campus Tours

Wednesday, May 23 from 4:00 - 6:00 p.m.
Thursday, May 24 from 4:00 - 6:00 p.m.
NAMRC XXIX will provide transportation to tour the Machine Tool Research Center, the Center for Intelligent Machines and Robotics, and the System Automation and Mobility in Manufacturing Laboratory, plus other manufacturing related laboratories located on campus.

You may also want to take a tour of the University of Florida campus on your own. Maps of the campus will be provided in your registration packet.
Guest Program

Miracle on 34th Street Museums - Tuesday, May 22, 2001
These are self-guided tours of the Florida Museum of Natural History and the Harn Museum of Art. These museums are located directly across the street from the University of Florida Hotel and Conference Center.

Historic St. Augustine Tour - Wednesday, May 23, 2001
This full-day tour will provide the opportunity to visit historic St. Augustine, Florida, the oldest city in the continental United States. Tour guides will pick you up at your hotel at 8:00 a.m. and drive to St. Augustine via Melrose and Palatka, Florida. Tour participants will return in time for the Wednesday evening NAMRC Banquet at the host hotel.

Nature's Wonders Tour - Thursday, May 24, 2001
See some of the natural wonders of this region as well as enjoy a relaxing fun canoe trip on the Santa Fe River. Tour guides will pick you up at your hotel at 8:00 a.m. You will begin with a walk down into the Devil's Millhopper, a 508-foot wide, 120-foot deep geological formation that contains plants rarely found in Florida, along with small waterfalls.

Antique Lovers/Plants and Prairies Tours - Thursday, May 24, 2001
This tour will journey to Micanopy, the oldest town in the area, dating to 1824. You will visit the Thrasher Warehouse Museum, explore the antique shops and galleries for which the town is noted, and visit a 20,000-acre wildlife sanctuary. For both tours on Thursday, tour participants will return to the hotel in time for the NAMRC Reception.

Registration Fees
All fees are in US dollars and are payable to the University of Florida. We accept cash, checks, money orders, VISA or MasterCard, and electronic fund transfers (additional service fee will apply). Complete one registration form per person. Guest Program participants should complete their own registration form. Make additional copies of the form as needed.

All fees except the guest registration includes entrance to all technical sessions, all conference materials, publications, meal functions, and laboratory tours, which include transportation. Included in the guest registration fees are conference breakfasts, banquet and two receptions; and guest program tour (see Guest Program for details). There are no single-day registration fees. There are no reduced registration fees for authors or session chairs.

Cancellations and Refunds
Refunds, less an administrative fee of $100.00 will be made for all cancellations received in writing with a postmark before May 10, 2001. No refunds will be made after that date, but a substitution of attendees may be made by notifying the Department of Conferences prior to the conference. Please allow six to eight weeks to receive check refunds. Credit card refunds will be issued to the credit card that had made payment. Should this event cancel in entirety, the University's liability is limited to a refund of the registration fees paid.

Lodging
NAMRC 2001 will be held at the University of Florida Hotel and Conference Center - A DoubleTree Hotel. A block of rooms is reserved for NAMRC attendees at a reduced rate of $119 per night for a king or double room; the student rate is $109 per night for a king or double room. Please contact the hotel directly at (352) 378-0070 by April 22, 2001 and mention "NAMRC" to receive the reduced rate. If you are a student, mention "NAMRC Student". You may also make reservations online by visiting the University of Florida Hotel's Web site: www.ufhotel.com.

The University of Florida Hotel and Conference Center is located on SW 34th Street directly across from the Harn Museum of Art on the University of Florida Campus between Hull Road and 19th Ave. This offers quick accessibility to the entire university campus and is just 15 minutes away from Gainesville Regional Airport, Interstate 75 and Highway 441.

All international participants are responsible for securing their own visa and health insurance needs.

Special Needs
The University of Florida provides reasonable access for persons with disabilities and other special needs, such as dietary. Please notify the Department of Conferences if special accommodations are needed to participate in this conference, by indicating accommodation on the registration form or by calling (352) 392-1701 or e-mail conferences@doce.ufl.edu.
How to Register

Online:
www.doc-e-conferences.ufl.edu/NAMRC
This is a secure server for your method of payment.

Mail:
Complete the registration form at the back of this brochure and mail it with your payment using check, money order, or charge card number to:
University of Florida
Conference Department
PO Box 113172
Gainesville, FL 32611-3172.

Fax:
(352) 392-6950
Attention: Conference Department.

Call:
(352) 392-17G1
Ask to register for NAMRC.

For More Information

Visit the NAMRC XXIX Web site: www.sme.org/namr and link to the NAMRC XXIX information. Or visit direct at www.doc-e-conferences.ufl.edu/NAMRC. Call (352) 392-1701 or e-mail conferences@doc-e.ufl.edu

Tuesday, May 22, 2001

8:30 a.m. - 5:30 p.m.
NAMRI/SME Board Meeting
Board Room, University of Florida Hotel & Conference Center

5:30 p.m. - 9:00 p.m.
Conference Registration and Welcoming Reception
Outdoor Dining Area, University of Florida Hotel & Conference Center

Wednesday, May 23, 2001

7:30 a.m. - 8:30 a.m.
Registration and Breakfast
Pre-function Lobby - Breakroom, University of Florida Hotel & Conference Center

8:30 a.m. - 9:30 a.m.
Welcoming Ceremony
Century Ballroom B & C, University of Florida Hotel & Conference Center
Opening Remarks:
Jit Huaty, Chair NAMRC XXIX
Welcoming Remarks:
Rajiv Shrivast, President, NAMRI/SME
M. Jack Olinian, Dean, University of Florida, College of Engineering
Keynote Address:
Subjective History of Chatter Research
Jit Huaty, Director, Machine Tool Research Center, University of Florida

9:30 a.m. - 10:00 a.m.
Refreshment Break
10:00 a.m. - 12:00 noon
Concurrent Technical Sessions

Session 1A: Invited Lectures on Machine Tools
Hawthorne, University of Florida Hotel & Conference Center
Co-Chairs: John Ziegert, University of Florida
Scott Smith, University of North Carolina at Charlotte

Feed Drives for High Speed Machine Tools
C. Pritschow, University of Stuttgart

Techniques of Modeling, Predicting and Controlling of Chatter
S. Smith, University of North Carolina at Charlotte
Session 1B: Forming I - Rolling
Hickory, University of Florida 
Hotel & Conference Center

Co-Chairs: Jack Jensen, Queen's University
Jian Cai, Northwestern University

Simplified Three-Dimensional Simulation of Ring Rolling With Grooved Rolls By Rigid-Plastic Finite Element Method Using Generalized Plane-Strain Modeling
K. Mori, and N. Hitamatsu, Toyohashi University of Technology

Analysis of Interfacial Slip in a Two-Roll Cross-Wedges Rolling Process
Q. Li, M.R. Lovell, and Z. Deng, University of Pittsburgh

Caliper Design in Shape Rolling By Finite Element Method
HJ. Kim, and Y. Lee, POSCO Technical Research Laboratories; S.M. Hwang, Pohang University of Science and Technology

A Prediction of the Surface Profile of the End Cap Section in End Rolling
Y. Lee and W.Y. Choi, POSCO Technical Research Laboratories; H.J. Kim and S.M. Hwang, Pohang University of Science and Technology

Session 1C: Manufacturing Systems I - Microtechnology  
Asena, University of Florida Hotel & Conference Center

Co-Chairs: Allen P. Mahin, University of Alabama
T.D. Yearian, Georgia Institute of Technology

Fabrication of NAI Intermetallic Reactors for Microtechnology-Based Energy Chemical Systems (MECS)
D.E. Alman and R.D. Wilson, Albany Research Center; B.K. Paul, Oregon State University

Limits on Aspect Ratio in Two-Fluid Micro-Scale Heat Exchangers
B.K. Paul, H. Vosian and J.S. Thomas, Oregon State University; R.D. Wilson, and D. Alman, Albany Research Center

Fabrication of Microscopic, Flexible, High Pressure Microchannel Heat Exchangers (MPEX)
J.C. Selly, M.L. Phillips, and M.A. Shannon, University of Illinois at Urbana-Champaign

Characterization of Metallic Fad Joints Using Diffusion Bonding and Diffusion Soldering in Micro-Technology-Based Energy and Chemical Systems
M. Gabriel and B.K. Paul, Oregon State University; R.D. Wilson and D.E. Alman, Albany Research Center

12:00 noon - 1:30 p.m.
NAMRKSME Awards Luncheon and Founders Lecture
Century Ballroom A, University of Florida Hotel & Conference Center
Presiding: Raju Shapuri, President, NAMRKSME
Lecturer: Milton Shaw, Professor Emeritus, Arizona State University

1:30 p.m. - 3:30 p.m.
Concurrent Technical Sessions

Session 2A: Materials Removal I - Dynamics
Hawthorne, University of Florida Hotel & Conference Center

Co-Chairs: Robert Hocken, University of North Carolina at Charlotte
Shoushik Athavale, Ford Research Laboratory

Intermittent Grinding and Damping in Milling
L. Balin, Wayne State University

A Study on Coarse Mass Grinding with Variable Stiffness Regulating Wheel
V. Redhakrishnan, M.Kavithakumar, R.S. Hari, and N. Ramesh Babu, Indian Institute of Technology Madras

A New Method of Payment for Milling
J.P. Snyder, University of North Carolina at Charlotte; M.A. Davies and J.R. Pratt, NEST; S. Smith, University of North Carolina at Charlotte

The Effect of Geometry and Machining Factors in End Milling: An Experimental Approach
W. R. Etter, The University of Michigan; O. B. Ozdoganlar, University of Illinois at Urbana-Champaign

Session 2B: Forming II - Friction
Hickory, University of Florida Hotel & Conference Center

Co-Chairs: Ken Ichinori, Tokyo University of Technology
Michael Lovell, University of Pittsburgh

A Friction Sensor For A Sheet Metal Forming Simulator
J. Jeniest, P. Wild, and H. Seifon, Queen's University

FEM Simulation of Clinched Joints Behavior
D. Antolnelli and M.A. Settoni, Politecnico di Torino

Influence of Antistaticity on Friction Estimated by the Ring Test
P. Hartl and H. Hau, Royal Institute of Technology

Lubrication in Tube Hydroforming (THF)
G. Nagl, V. Federico, K. Tilhari and T. Altan, The Ohio State University
Session 2-C: Manufacturing Systems II - Controls and Systems Design  
Azalea, University of Florida Hotel & Conference Center  
Co-Chairs: Kornel F. Ihmann, Northwestern University  
Doug Dixon, Cullen Corporate Research

Controller Design for a Platform-Based Automated Finishing System  
G. J. Wiens, University of Florida; N.K. Havrili, Fanuc Robotics North America

Modular Technologies for Intelligent Motion Unit with Linear Motor and Axis Control  
B. Koninckx, and H. Van Brussel, Katholieke Universiteit Leuven; J. Van Eijk, and N. Meijerman, Philips CFT

Distributed Control of Machine Capacity and Production Scheduling  
S. Cho and V.V. Prabhu, The Pennsylvania State University

Evaluation of the Plant Design of Two Automotive Suppliers Using the Manufacturing System Design Decomposition  
J. Linck and D.S. Cochran, Massachusetts Institute of Technology; P. Netze, Technical University of Munich

1:30 p.m. - 5:30 p.m.  
Council Of Manufacturing Engineering Chairs/Coordinators (COME-C) Meeting  
Board Room, University of Florida Hotel & Conference Center

3:30 p.m. - 4:00 p.m.  
Refreshment Break

4:00 p.m. - 6:00 p.m.  
Concurrent Technical Sessions

Session 3-A: Material Removal V - Difficult Materials  
Hawthorne, University of Florida Hotel & Conference Center  
Co-Chairs: I.S. Jawahir, University of Kentucky  
Walter W. Olson, The University of Toledo

Milling of Titanium Alloy Using Directly Through Spindle Coolant  
D. Barnett-Riessy, R. Hachmiller and M.A. Elbestawi, M.I.T.

Tool Life, Wear Rates, and Surface Quality in Hard Turning  
T.G. Dawson and T.R. Kurfess, Georgia Institute of Technology

An Experimental Investigation into the Machining of SiCp/Mg Metal Matrix Composite  
W.F. Pederson and M. Ramulu, The University of Washington

Machining Characteristics of a Titanium Metal Matrix Composite  
S.M. Hayes, M. Ramulu and W.F. Pederson, The University of Washington

Session 3-B: Forming III - Sheet Metals  
Hickory, University of Florida Hotel & Conference Center  
Co-Chairs: Taylan Altan, The Ohio State University  
Y. Lawrence Yao, Columbia University

Optimization of the Blankholder Thickness for Sheet Metal Forming Using Finite Element Analysis  
W. Nehel, K.J. Weimar and W.J. Ebrum, Michigan Technological University

Optimization Design of Variable Blankholder Force in U-Shaped Part Forming to Eliminate Springback Error  
Z. Lin, G. Liu, W. Xu and Y. Bao, Shanghai Jiaotong University

Incremental Single Point Forming  
J. Jeswiet, Queen's University

Enhancement of Sheet Metal Formability via Local Adaptive Controllers  
B.K. Kinsey and J. Cao, Northwestern University

Session 3-C: Manufacturing Systems III - Tolerances and Analysis  
Azalea, University of Florida Hotel & Conference Center  
Co-Chairs: Shiv G. Kapoor, University of Illinois at Urbana-Champaign  
Matthew A. Davies, National Institute of Standards and Technology

The Tolerance Analysis and Optimization Problem: Modelling Issues and Experimental Verification  
M. Gadsbullah, Cairo University

Prediction of Component Dimensional and Geometric Accuracy Through Manufacturing Error Synthesis  
Q. Liu and S. H. Huang, The University of Toledo

Robust Evaluation of Straightness and Flatness Tolerance Using Simulated Annealing  
S. J. Hong, B. Stulens and S. Anand, University of Cincinnati

Linear State Space Modeling of Dimensional Machining Errors  
D. Djuricinovic and J. Ni, The University of Michigan

4:00 p.m. - 6:00 p.m.  
Concurrent Laboratory Tours  
University of Florida Campus (Transportation Provided)

7:00 p.m. - 9:30 p.m.  
NAMRC Banquet  
Century Ballroom, University of Florida Hotel & Conference Center
Thursday, May 24, 2001

7:30 a.m. - 8:30 a.m.
Registration and Breakfast
Pre-function Lobby - Breakaway, University of Florida Hotel & Conference Center

8:00 - 10:00 a.m.
Concurrent Technical Sessions

Session 4-A: Material Removal III - Finishing
Hawthorne, University of Florida Hotel & Conference Center
Co-Chairs: William J. Endres, The University of Michigan
Brian K. Reid, Oregon State University

Study of the Magnetic Field Behavior and its Relationship to the Processing Characteristics in a Magnetic Field-Assisted Barred Electroplating Process
H. Yamauchi, T. Shimizu, and N. Horiuchi, University of Iceland

Qualitative Analysis of the Wear of Stone and Ring in Superfinishing Bearing Rings, Using FEM
G. Dorn, S. Cie, S. Neagu-Neitzel, I. Marinescu, and W. Olson, University of Toledo

Visualization of Groove Interactions During the Deluping to Bright Polishing Transition
R. B. Minkov, Jr., National Institute of Standards and Technology, Western New England College; E. P. Whitenton and C. J. Evans, National Institute of Standards and Technology

Simulation of Water Scale Variations in Chemical Mechanical Polishing
V. Eemel, G. T. G. Nair, and A. Chandika, Iowa State University

Session 4-B: Material Removal IV - Environmental and Cutting Mechanics
Hickory, University of Florida Hotel & Conference Center
Co-Chairs: Günther Pritschow, University of Stuttgart
R. C. Shin, Purdue University

Model of Biomass Concentration in a Mesofluidic Fluid Reservoir Subject to Constant Effluent Concentration During Membrane Filtration
S. J. Skelton, R. E. DeVa, S. G. Kapoor, N. Rajagopalan, and R. A. Sanftor, University of Illinois at Urbana-Champaign

Environmentally Friendly Dry Cutting Using Heat Absorption Tool
M. Jin, H. Noguchi, and M. Murakawa, Nippon Institute of Technology

Low-Speed Orthogonal Machining of Copper with a Hardness Gradient
L. N. Payne and J. T. Black, Auburn University

Modeling of Ductile Cutting of Tungsten Carbide
K. Liu and X. L., National University of Singapore

Session 4-C: Manufacturing Systems IV - CAD and Process Modeling
Azalea, University of Florida Hotel & Conference Center
Co-Chairs: Michael Philpot, University of Illinois at Urbana-Champaign
Edward C. De Meyer, The Pennsylvania State University

Method for Creating High Quality Computer Model from Rough Model
H. Aoyama and Y. Nishihara, Keio University

Face Assignment for Three-Dimensional Coordinate Measurement Data
A. A. Claudet and T. R. Karfess, Georgia Institute of Technology

Surface Modeling Based on Characteristic Lines
T. Kusunoki and H. Aoyama, Keio University

Agent Interaction in CAD/CAM

8:00 a.m. - 12:00 noon
ASME Manufacturing Engineering Division (MED) Executive Committee Meeting
Board Room, University of Florida Hotel & Conference Center

10:00 a.m. - 10:30 a.m.
Refreshment Break

10:30 a.m. - 12:00 noon
Concurrent Technical Sessions

Session 5-A: Material Removal V - Grinding
Hawthorne, University of Florida Hotel & Conference Center
Co-Chairs: Ioan Marinescu, The University of Toledo
Michael Branch, Storage Technology

Specific Grinding Energy Causing Thermal Damage in Helicopter Gear Steel
J. A. Mayer, Jr., A. H. Price, G. K. Purschka, and A. M. Dieter, Texas A & M University; M. S. Papi, Army Research Laboratory

Band Grinding in Grinding of Hardened Steel with Conventional and Superabrasive Wheels
C. Bahr, D. Dollamore, and G. Wurmer, University of Kaiserslautern

Surface Grinding in Silicon Wafer Manufacturing

Session 5-B: Forming IV - Forming Processes
Hickory, University of Florida Hotel & Conference Center
Co-Chairs: Steven Schmid, Notre Dame University
Alvin Sabol, Metal Working Consultants
Session 6-B: Forming / Material Removal - Laser and Thermal
Hickory, University of Florida Hotel & Conference Center

Co-Chairs: K. J. Weigmann, Michigan Technological University
Amit Bagchi, NTI Products, Inc.

Laser Forming of Titanium Aircraft Parts
D. E. Walczyk and S. Vittal, Rensselaer Polytechnic Institute

Cooling Effects in Multispec Laser Forming
J. Cheng and Y. L. Yao, Columbia University

Temperatures in Ironing of Polymer-Coated Steels
C.-H. Huang and R. S. Schmid, University of Notre Dame

A Model for Workpiece Temperatures During Peripheral Milling Including the Effect of Cutting Fluids
G. Shen, A. Gandhi, O. Auci and J. W. Sutherland, Michigan Technological University

Session 6-C: Manufacturing Systems V - Error Compensation
Azalea, University of Florida Hotel & Conference Center

Co-Chairs: Thomas R. Kurless, Georgia Institute of Technology
Jerry Kozak, University of Nebraska at Lincoln

A Comparison of Support Vector Machines With Artificial Neural Networks for the Prediction of Thermal Errors in Machine Tools
R. Ramesh, M. A. Mannan and A. N. Poo, The National University of Singapore

Machining Error Compensation Using Neural Network and On-Machine Measurement Database
M. W. Cho, Inha University; T.-I. Seo and H.-D. Kwon, Korea Institute of Industrial Technology; M.-K. Kim, Korea University of Technology and Education; S.-H. Yang, Kyungpook National University

Quick Identification of Spatial-Variant Thermal Errors Using On-Machine Measurements of a 3D Articulated Arm
K.-D. Kim and S.-C. Chung, Hanyang University

Laser-CCD Based 6 Degree-of-Freedom Machine Error Measuring System (EC6DMS)
Y. Kagawa, Y. Yang, K. Yamazaki and J. Liu, University of California, Davis

3:30 p.m. - 3:45 p.m.
Refreshment Break
3:45 p.m. - 5:00 p.m.  
NAMRI/SME Member Meeting  
Hawthorne, University of Florida Hotel & Conference Center

5:00 p.m. - 6:15 p.m.  
ASME MED Member Meeting  
Hawthorne, University of Florida Hotel & Conference Center

4:00 p.m. - 6:00 p.m.  
Concurrent Laboratory Tours  
University of Florida Campus (Transportation Provided)

6:30 p.m. - 9:30 p.m.  
NAMRC Reception  
Florida Museum of Natural History and Ham Museum of Arts, University of Florida

Friday, May 25, 2001

7:30 a.m. - 8:30 a.m.  
Registration and Breakfast  
Pre-function Lobby - Breakroom, University of Florida Hotel & Conference Center

8:00 a.m. - 10:00 a.m.  
Concurrent Technical Sessions

Session 7-A: Material Removal VIII - Tools  
Hawthorne, University of Florida Hotel & Conference Center

Co-Chairs: Edward J. A. Armstrong, The University of Melbourne  
Vis Madhavan, Wichita State University

Thermophysical-Property-Based Selection of Coatings for Dry Machining of Carbon and Stainless Steels  
W. Grzesik, P. Nieslon and M. Bartoszuk, Technical University of Opole

Model-Based Design of Rotating-Insert Tools for Metal Cutting Applications  
J. Manjunathaiah, P. M. Beecherl and P. S. Szuba, Lamb Technicon Machining Systems; W. J. Endres, The University of Michigan

An Approach for Tool Sequence Selection in Three Axis Rough Machining  
M. Balasubramaniam, Y. Joshi and S. Sarma, Massachusetts Institute of Technology; Z. Shaik, Ford Motor Company

Prediction and Validation of Cutting Forces in Machining of Plain Carbon Steels with Chip Breaker Tools  
J. A. Aneculatyrane, The University of New South Wales; I. S. Jawahir, University of Kentucky

Session 7-B: Material Removal IX - Tool Wear  
Hickory, University of Florida Hotel & Conference Center

Co-Chairs: Kamalakar P. Rajurkar, University of Nebraska at Lincoln  
Christopher A. Brown, Worcester Polytechnic Institute

Self-Adaptive Tool Wear Monitoring System in Milling Process  
T. Matsumura and E. Usui, Tokyo Denki University

Understanding the Mechanisms of Crater Wear  
W. Kim and P. Kwon, Michigan State University

The Effect of Austenitization on Flank Wear in Machining Steels  
W. Kim and P. Kwon, Michigan State University

Tool Wear Monitoring in Machining Processes Through Wavelet Analysis  
L. Wang, M. G. Mehrabian and E. Kannatey-Asibu, Jr., The University of Michigan

Session 7-C: Manufacturing Systems VI - Fixturing  
Azalea, University of Florida Hotel & Conference Center

Co-Chairs: Jun Ni, The University of Michigan  
Stephen A. Baitzer, University of Arkansas

Simulations and Experiments in Encapsulation Fixturing  
E. Lee, S. E. Sarma and P. V. Alvarado, Massachusetts Institute of Technology

Experimental Study on the Effect of Conformability on Static Stability in a Flexible Machining Fixture  
J. F. Hurtado and S. N. Melkote, Georgia Institute of Technology

Part Location Algorithms For An Intelligent Fixturing System  
D. Chakraborty, DaimlerChrysler Corporation; E. C. DeMeter, The Pennsylvania State University; P. S. Szuba, Lamb Technicon Machining Systems

10:00 a.m. - 11:00 a.m.  
ASME MED 2001 NIMECE Symposium Organizers Planning Meeting  
Board Room, University of Florida Hotel & Conference Center

10:00 a.m. - 10:30 a.m.  
Refreshment Break

10:30 a.m. - 12:00 noon  
Concurrent Technical Sessions

Session 8-A: Material Removal X - Laser  
Hawthorne, University of Florida Hotel & Conference Center

Co-Chairs: Bin Wei, GE Corporate Research  
Daniel F. Walczyk, Rensselaer Polytechnic Institute

Laser Micromachining of a Biodegradable Polymer  
V. V. Kanchalara and S. Chen, Iowa State University; D. S. Zamzow and D. P. Baldwin, Ames Laboratory of U. S. Department of Energy
Conference Registration Form

NAMRC XXIX
May 22-25, 2001 • Gainesville, Florida USA
Complete a form for each individual attending (including Guest Program Registrants). Make copies as necessary.

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☐ Yes, I am presenting a paper or other lecture at NAMRC.
☐ No, I am not presenting a paper or other lecture at NAMRC.
☐ Yes, I have special needs (dietary or disability).
☐ No, I do not have special needs (dietary or disability).
☐ Yes, I will attend the Friday Luncheon.
☐ No, I will not attend the Friday Luncheon.

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IMPORTANT NOTICE: Reservation at Hotel must be made by April 22, 2001 to receive the conference rate of $119 per night, single/double room ($109 per night student rate). Phone (352) 392-6070 or visit www.uflhotel.com