



Research Experiences for Teachers

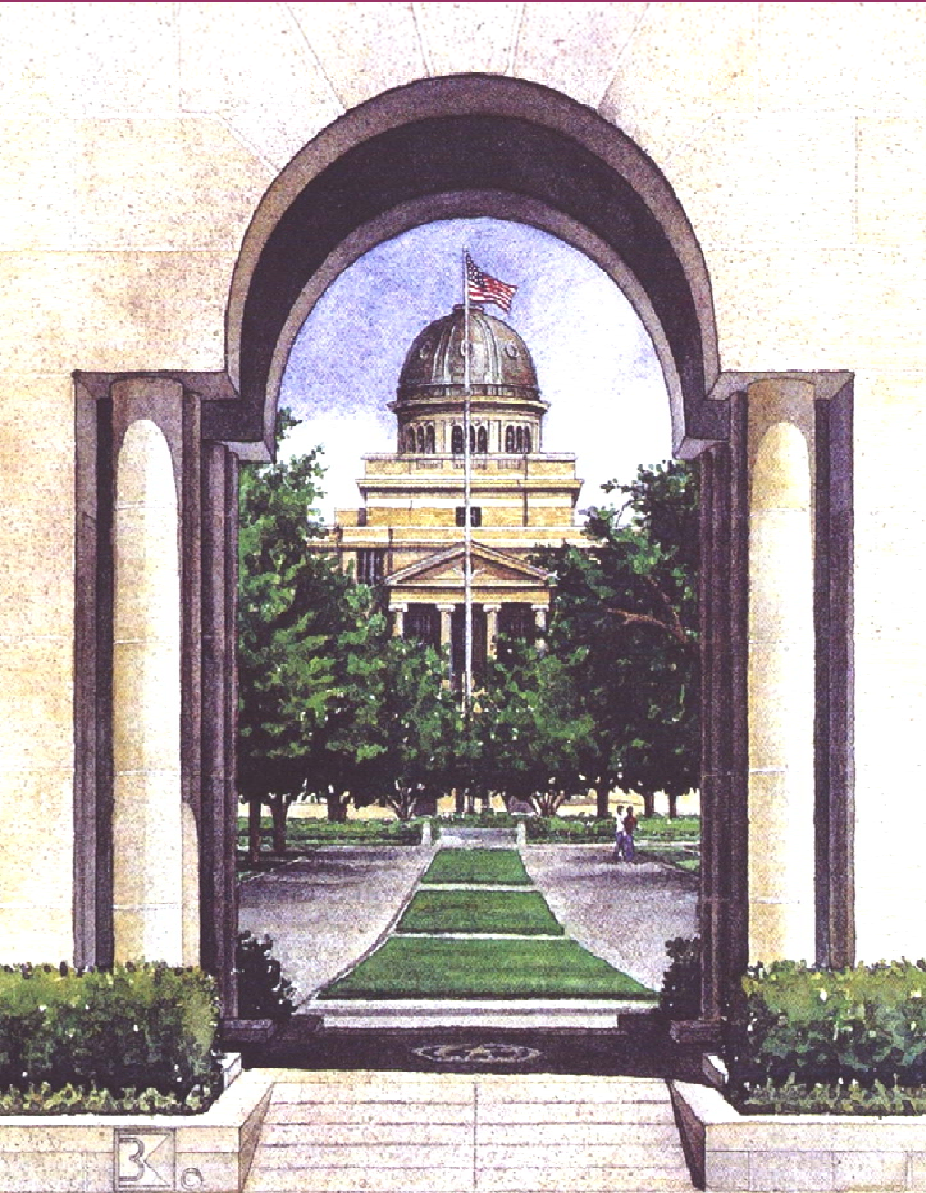
Wayne Hung

Texas A&M University, College Station, Texas

Contact: Hung@tamu.edu

Present at
HTEC Educators' Conference
Texas State Technical College
Waco, Texas
October 29, 2010

AGENDA



- 1) NSF-RET program
 - Objectives
 - Program highlights
- 2) RET programs at TAMU
 - K-12 teachers
 - College instructors
- 3) Proposed RET Site:
Sustainable Advanced
Manufacturing

NSF RET PROGRAM

- ❑ NSF supports the active involvement of university faculty with:
 - K-12 teachers
 - College instructors
- ❑ Objectives
 - Long-term collaborative partnerships
 - Bringing research experiences to class or lab activities
 - Motivate students to study engineering

NSF RET PROGRAM

❑ NSF

- Requests at least 2 teachers/school
- Provides ~\$10,000/year/teacher
- Awards ~\$2000/teacher for implementation

❑ Tasks

- Minimum 6 weeks attachment
- Following up plan
- Measureable impacts
- Yearly report

❑ More details at NSF website

(<http://nsf.gov/pubs/2007/nsf07557/nsf07557.htm>)

RET PROGRAMS AT TAMU

- ❑ RET Site by Robin Austenrieth and Karen Butler Purry
 - Years 2009-2012
 - \$500,000
 - For K-12 teachers
- ❑ RET Supplement by Wayne Hung
 - Year 2010
 - \$20,000
 - For community college instructors

NSF-RET PROGRAM (Summer 2010)

- ❑ Research areas: micromanufacturing and dynamics of turbomachinery
- ❑ Activity at TAMU
 - Work with graduate students / professor on a research topic
 - Tour other research centers
 - Develop class/lab experiment at home institution
- ❑ Deliverables
 - Technical poster presentation
 - Report on the selected topic and implementation
 - Follow up plan and impact

NSF-RET PROGRAM (Summer 2010)

- ❑ Two faculty from TSTC-Waco and Biomedical Manufacturing Center to attach to TAMU
- ❑ 8+1 week summer program
- ❑ \$5420 stipend + \$1565 meal & accommodation
- ❑ Schedule
 - Jun 1 – Jul 23 : research at TAMU
 - Jul 26-30 : implement at TSTC Waco
 - Dec 2010 : feedback and future plan

NSF-RET PROGRAM (Summer 2010)

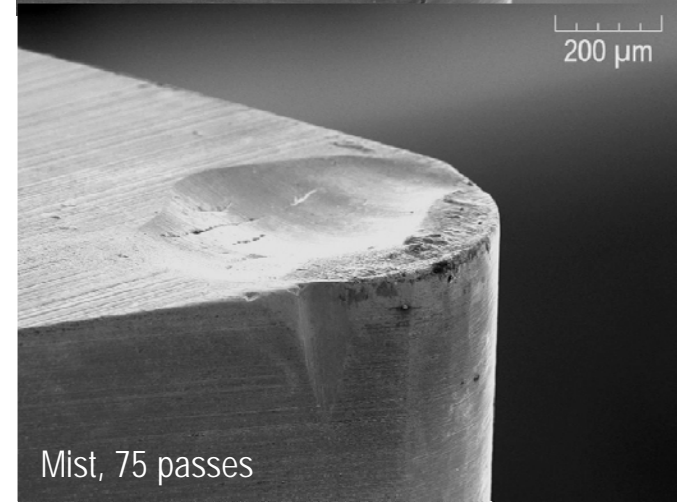
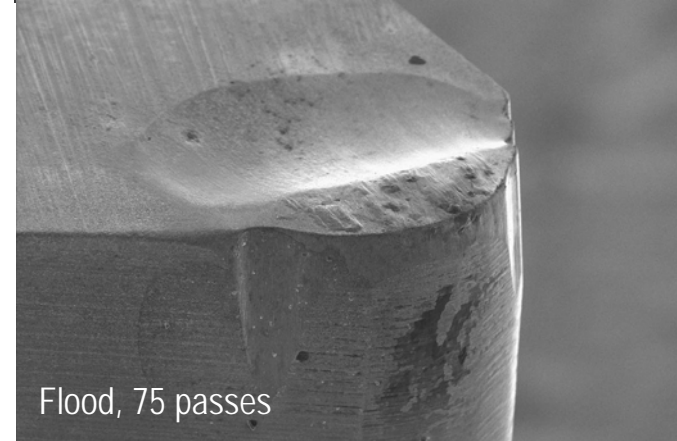
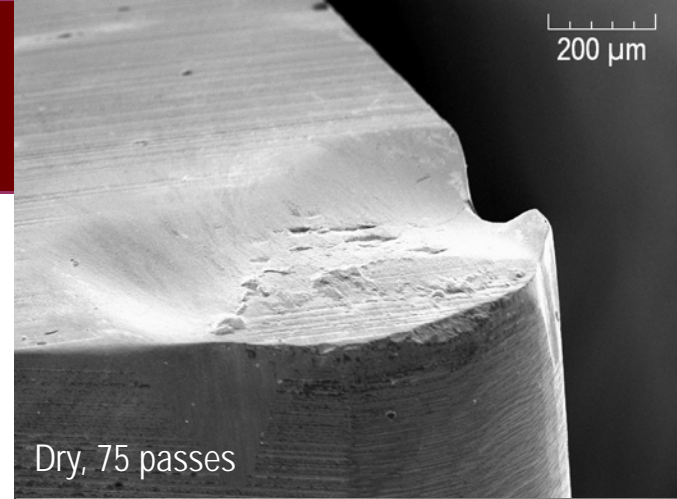
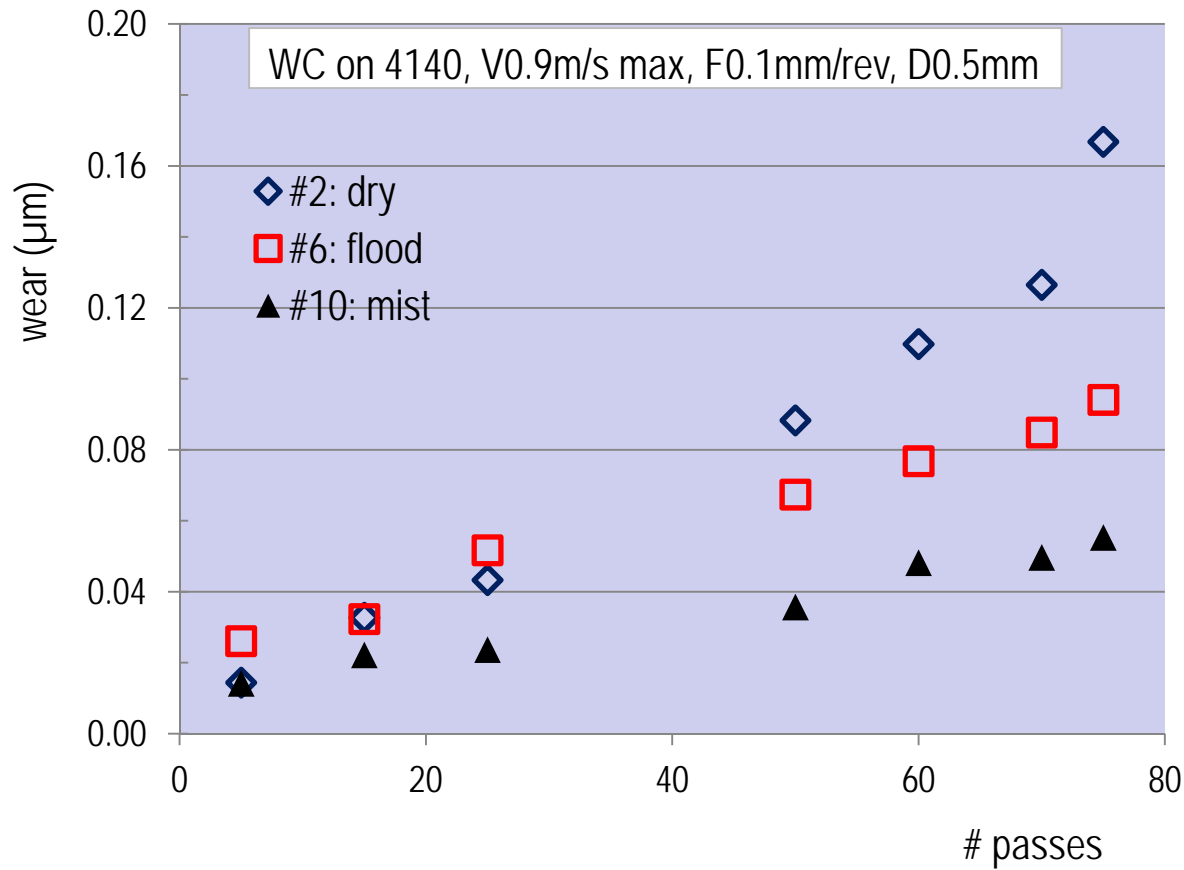


Rufus Lamere, TSTC

Gary SanMiguel, BMC

Project: Effects of Micromist on CNC Machining
<http://reumicro.tamu.edu>

MICROMIST in CNC machining



Machining with proper micromist:

- Less crater wear
- Less nose wear
- 50% less flank wear compared to flood cooling

NEW RET SITE PROPOSAL

- ❑ Theme: Sustainable Advanced Manufacturing
- ❑ Schedule: 2011-2013
- ❑ Objectives: Develop new technologies to:
 - Generate sustainable employment
 - Motivate young students to study and explore manufacturing engineering/ science

NEW RET SITE PROPOSAL

- ❑ What: Sustainable Advanced Manufacturing
- ❑ Sponsors: NSF, SME, and industry
- ❑ Who: Instructors at community colleges in Texas to join proposed RET program at TAMU

- ❑ Participating colleges:
 - No cost sharing
 - Letter of support by mid November, 2010