

**Proposal to National Science Foundation
For a Industry University Center for Research Collaboration
(I/UCRC)
on
Advanced Cutting Tool and Tooling Technologies (ACT³)
By
Georgia Institute of Technology
And
Michigan State University**

What is I/UCRC?

The Industry/University Cooperative Research Centers (I/UCRCs) program develops long-term partnerships among industry, academe, and government. The centers are catalyzed by a investment from the National Science Foundation (NSF) and are primarily supported by center members, with NSF taking a supporting role in their development and evolution. I/UCRCs stimulate highly leveraged industry/university cooperation by focusing on fundamental and applied research recommended by Industrial Advisory Boards.

Research Thrust Areas:

- (1) Identification of wear mechanisms under various machining conditions
- (2) Predictive Modeling of wear progression and tool life
- (3) Design of multi-layer coatings from the local wear models
- (4) Development of brazed materials such PCD and CBN by dissolution
- (5) Application of tool wear models for the selection of tool materials
- (6) Optimization of tool geometry and cutting parameters
- (6) Determination of tool coating effects on machinability and efficiency
- (7) Control of part integrity through tooling design

Research Partners:

Georgia Institute of Technology

Michigan State University

National Laboratories

Cutting Tool Manufacturers

Machine Tool and Fixture Manufacturers

Leading machining technology and cutting tool industry users

Time Line:

June, 2006	Letter of Intent
August, 2006	Planning grant proposal with supporting letters from partners
February, 2007	NSF approval of a planning grant
February, 2007	Full Proposal with commitment letters from partners