

# OBIKAWA LAB.

[ Advanced machining/manufacturing process ]

Department of Mechanical and Biofunctional Systems

<http://obikawalab.iis.u-tokyo.ac.jp>

Department of  
Mechanical  
Engineering

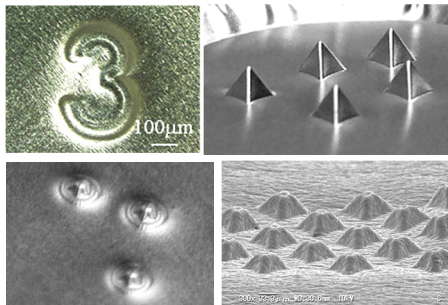
Fine Machining and Fabrication Systems

## Fine Manufacturing

### Research topics

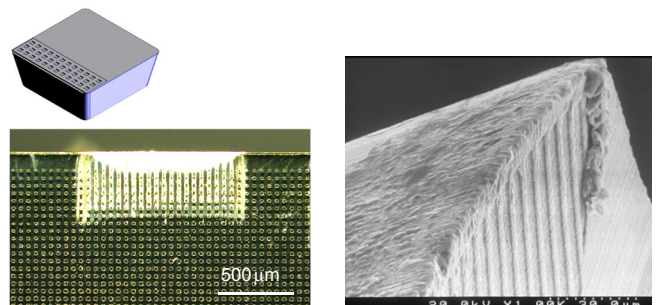
- ◆ High-speed and high efficiency machining of aero-space materials
- ◆ Single point incremental microforming of miniature shell structures
- ◆ High performance tools with micro surface textures
- ◆ Cutting tools with thin film sensors: thermal sensor and stress sensor
- ◆ Ecological machining of aero engine materials
- ◆ Multi-physics analysis of machining

### Single point incremental microforming of miniature shell structures



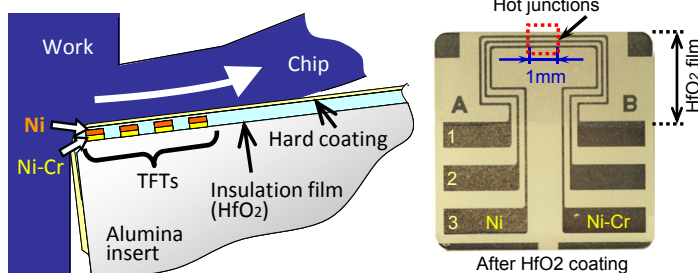
Miniature shell structures of aluminum foil and an array of pyramids of thin ceramic film fabricated through forming ad coatig (lower right)

### High performance tools with micro surface textures



Micro surface textures at the tool face (after machining)

### Cutting tools with thin film sensors (Thermal sensor)



Tool with thin film thermocouples (TFTs): Schematic (left figure) and a developed tool insert for orthogonal machining (right figure)

### Multi-physics analysis of machining (End milling and MQL machining)

