

OBIKAWA LAB.

[Advanced machining/manufacturing process]

Department of Mechanical and Biofunctional Systems

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

Department of
Mechanical
Engineering

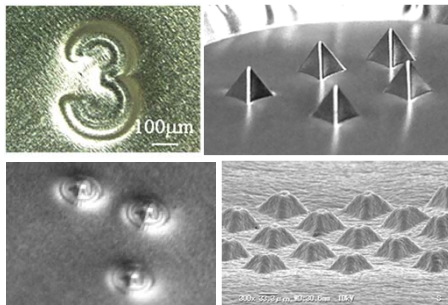
Fine Machining and Fabrication Systems

Fine Manufacturing

Research topics

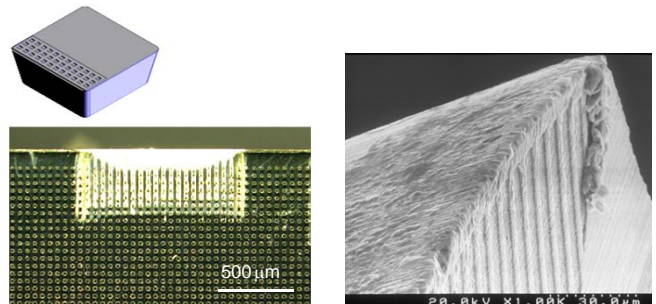
- ◆ Single point incremental microforming of miniature shell structures
- ◆ High performance coated tools with micro surface textures
- ◆ Cutting tools with built-in thin film sensors
- ◆ High-speed and high efficiency cutting of aero-space materials
- ◆ Ecological machining of aero engine materials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

Single point incremental microforming of miniature shell structures



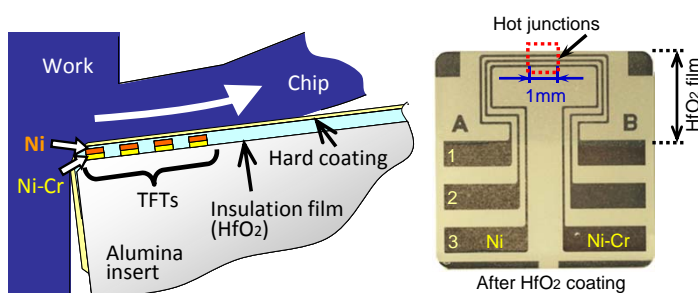
Miniature shell structures of aluminum foil and an array of pyramids of thin ceramic film fabricated through forming ad coatig (lower right)

High performance tools with micro surface textures



Micro surface textures at the tool face (after machining)

Cutting tools with built-in thin film sensors



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)

