

# TSUCHIYA LAB.

## Machining/Assembly Technologies for Highly Efficient Production



Department of Mechanical and Biofunctional Systems

Applied Micro Manufacturing

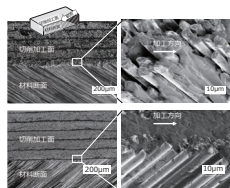
Department of Mechanical Engineering, Graduate School of Engineering

<http://cossack.iis.u-tokyo.ac.jp/top.html>

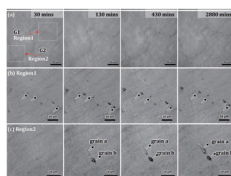
### Machining/Assembly Technologies for Highly Efficient Production

Our laboratory develops machining technology that creates a shape, and assembling/ implementation/inspection of the components technology for from micro-scale to macro-scale devices.

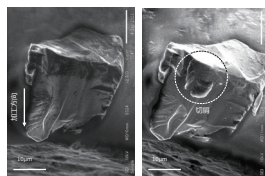
- ◆ Mechanism elucidation of lapping tool surface instability
- ◆ Research on ultra-high pressure coolant for machining difficult-to-cut materials
- ◆ Elucidation of Cutting Phenomena of CFRP
- ◆ Development of a contact-type tool setter with 10nm resolution
- ◆ Single abrasive grain machining for elucidation of microscopic mechanism of polishing process
- ◆ Analysis of mechanical phenomena between tool and workpiece in machining
- ◆ Research on micro-shape of cutting edge and cutting performance



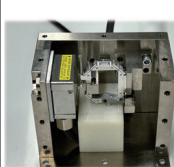
Cutting surface and material cross section of CFRP material



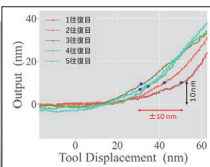
New grains growing on Sn substrate surface after polishing



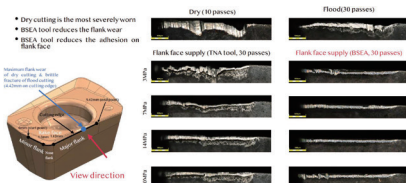
SEM images of  $Al_2O_3$  abrasive grains before (left) and after (right) single grain cutting test



contact type tool length measuring system



Repeated test of tool contact detection



Wear reduction effect of coolant at different supply pressures and supply positions (left: side edge, right: tool tip)

