TSUCHIYA LAB.

Machining/Assembly Technologies for Highly Efficient Production

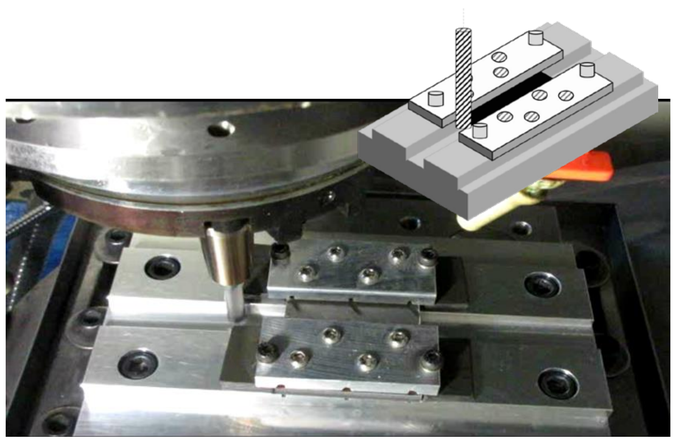
Department of Mechanical and Biofunctional Systems

Applied Micro Manufacturing
Department of Mechanical Engineering, Graduate School of Engineering
http://cossack.iis.u-tokyo.ac.jp/top-j.html

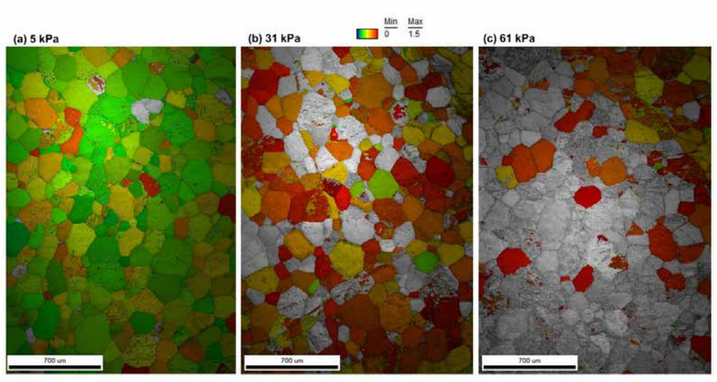
Machining/Assembly Technologies for Highly Efficient Production

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.

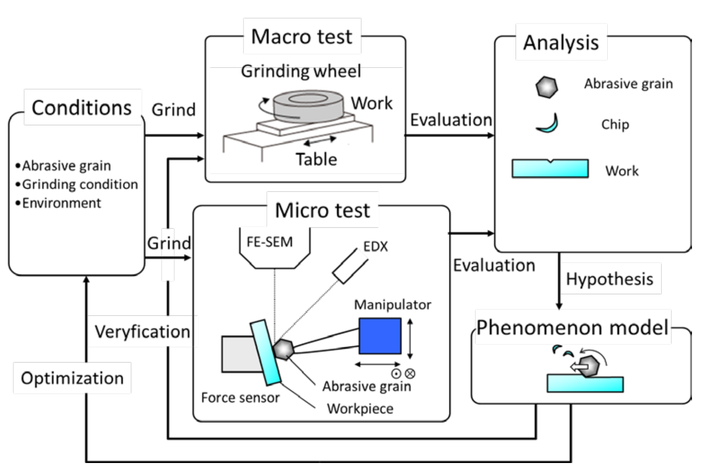
- ◆Analysis of mechanical phenomena between tool and workpiece in machining
- ◆Development of a contact-type tool length measuring instrument with sub-μm accuracy
- ◆Control of residual stress on machined surfaces
- ◆Research on micro-shape of cutting edge and cutting performance
- ◆Mechanism elucidation of lapping tool surface instability
- ◆Benchmarking of Cutting Tools for CFRP
- ◆Precision cutting of organic glass
- ◆Cutting test with single abrasive grain under microscope observation



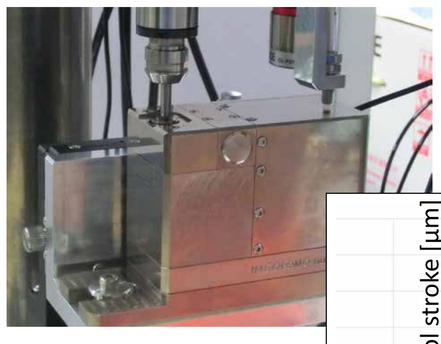
Evaluation test of cutting tools for CFRP



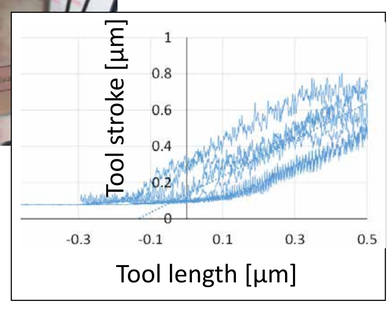
Superposed image quality (IQ) in greyscale and grain orientation spread (GOS) maps of the polished Sn-1.0wt%Bi alloy one hour after polishing under different pressures.



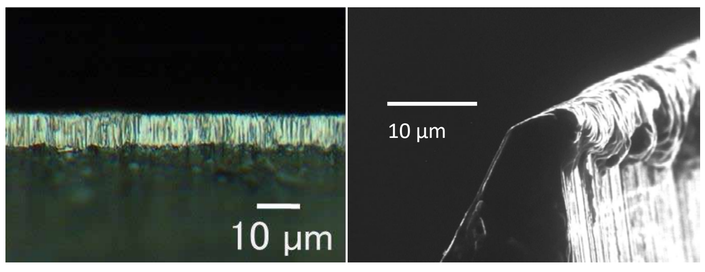
Flow of optimal grinding wheel development by single grain cutting test

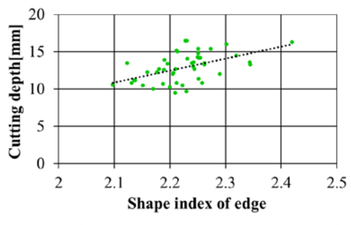


contact type tool length measuring system



Repeated test of tool contact detection

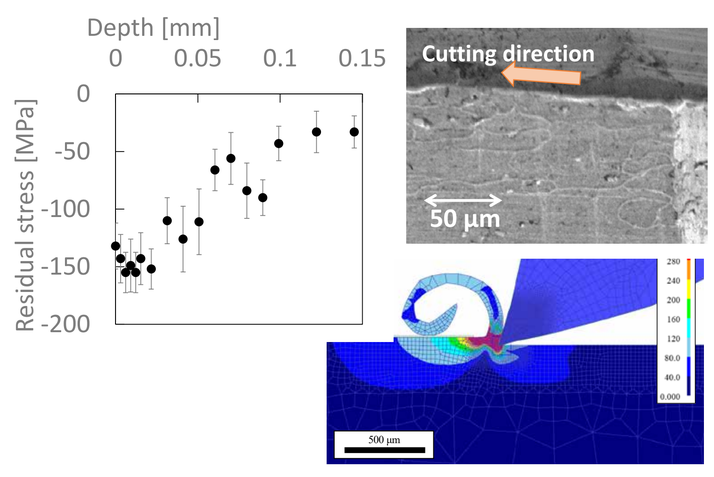




$$(1)\ \left.\frac{dy}{dx}\right|_{x=h} \leq 0$$

$$(2)\ y \geq \max_{h \leq x \leq h+d} f(x) - a$$

Relationship between the edge shape of a cutting blade and its cutting performance.



(Upper left) Residual stress distribution of the workpiece, (Upper right) Crystal structure inside, (Lower right) Stress distribution analysis result during cutting