TSUCHIYA LAB.

Machining/Assembly Technologies for Highly Efficient Production

Department of Mechanical and Biofunctional Systems

Applied Micro Manufacturing
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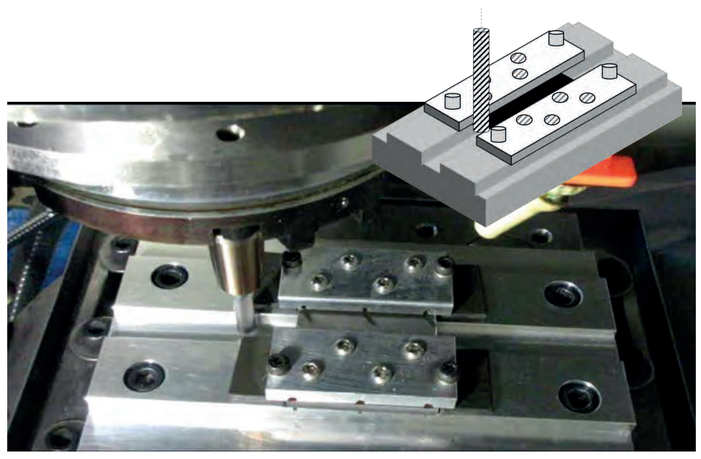
http://cossack.iis.u-tokyo.ac.jp/top-j.html

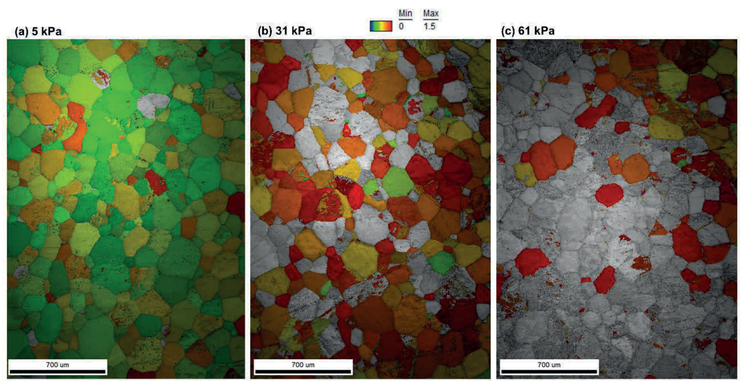
Machining/Assembly Technologies for Highly Efficient Production

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.

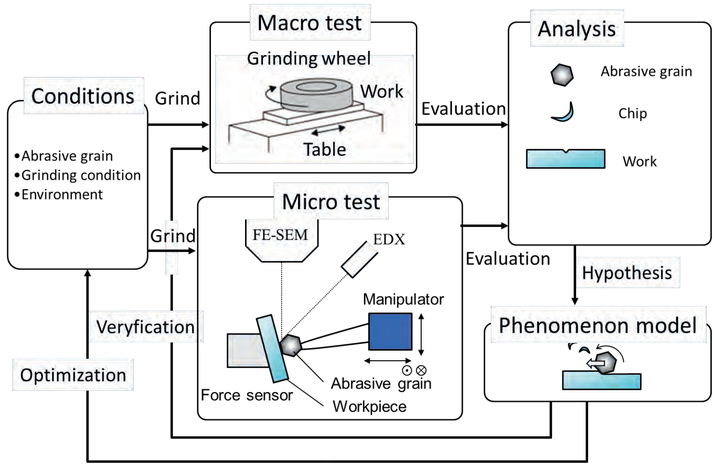
- ◆Analysis of mechanical phenomena between tool and workpiece in machining
- ◆Development of a contact-type tool length measuring instrument with sub-μm accuracy
- ◆Research on micro-shape of cutting edge and cutting performance
- ◆Mechanism elucidation of lapping tool surface instability
- ◆Benchmarking of Cutting Tools for CFRP
- ◆Cutting test with single abrasive grain under microscope observation
- ◆Research on ultra-high pressure coolant for machining difficult-to-cut materials



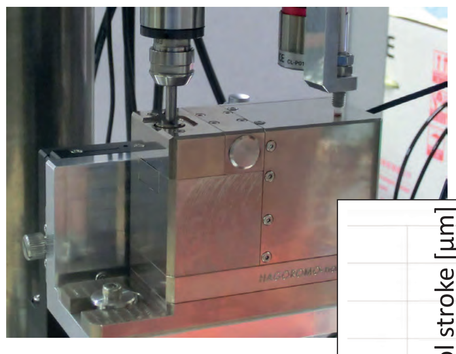
Evaluation test of cutting tools for CFRP



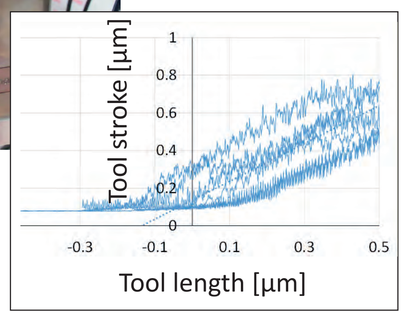
Superposed image quality (IQ) in greyscale and grain orientation spread (GOS) maps of the polished Sn-1.0wt%Bi alloy one hour after polishing under different pressures.



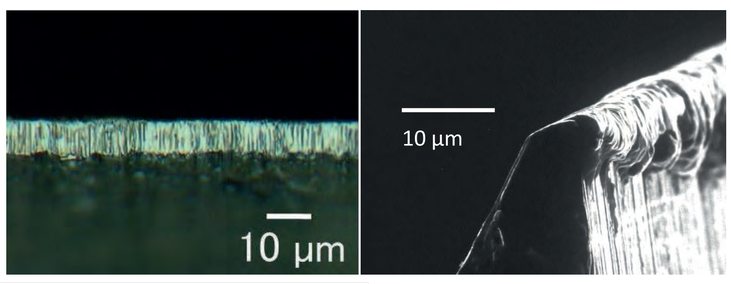
Flow of optimal grinding wheel development by single grain cutting test

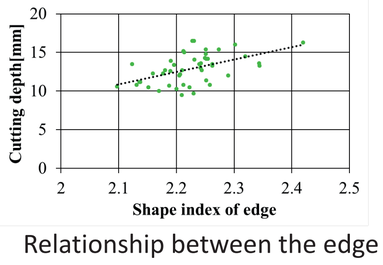


contact type tool length measuring system



Repeated test of tool contact detection

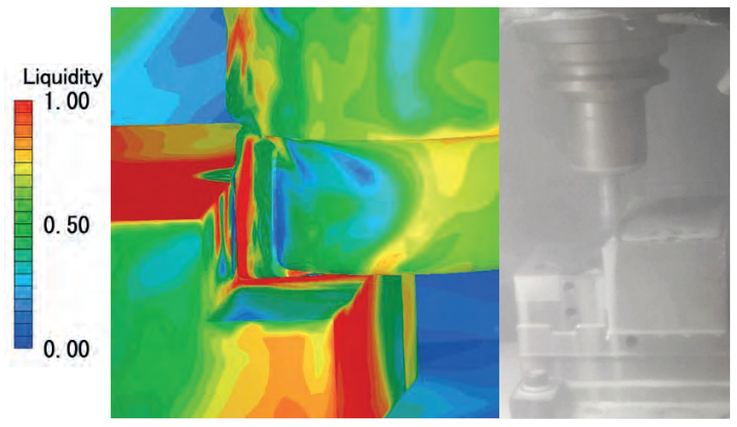




(1) $\left.\frac{dy}{dx}\right|_{x=h} \leq 0$

(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.



Simulation results of refueling effect (left) and cutting experiment with ultra-high pressure coolant (20MPa) (right)