

TSUCHIYA LAB.

Machining/Assembly Technologies for Highly Efficient Production



Department of Mechanical and Biofunctional Systems

Applied Micro Manufacturing

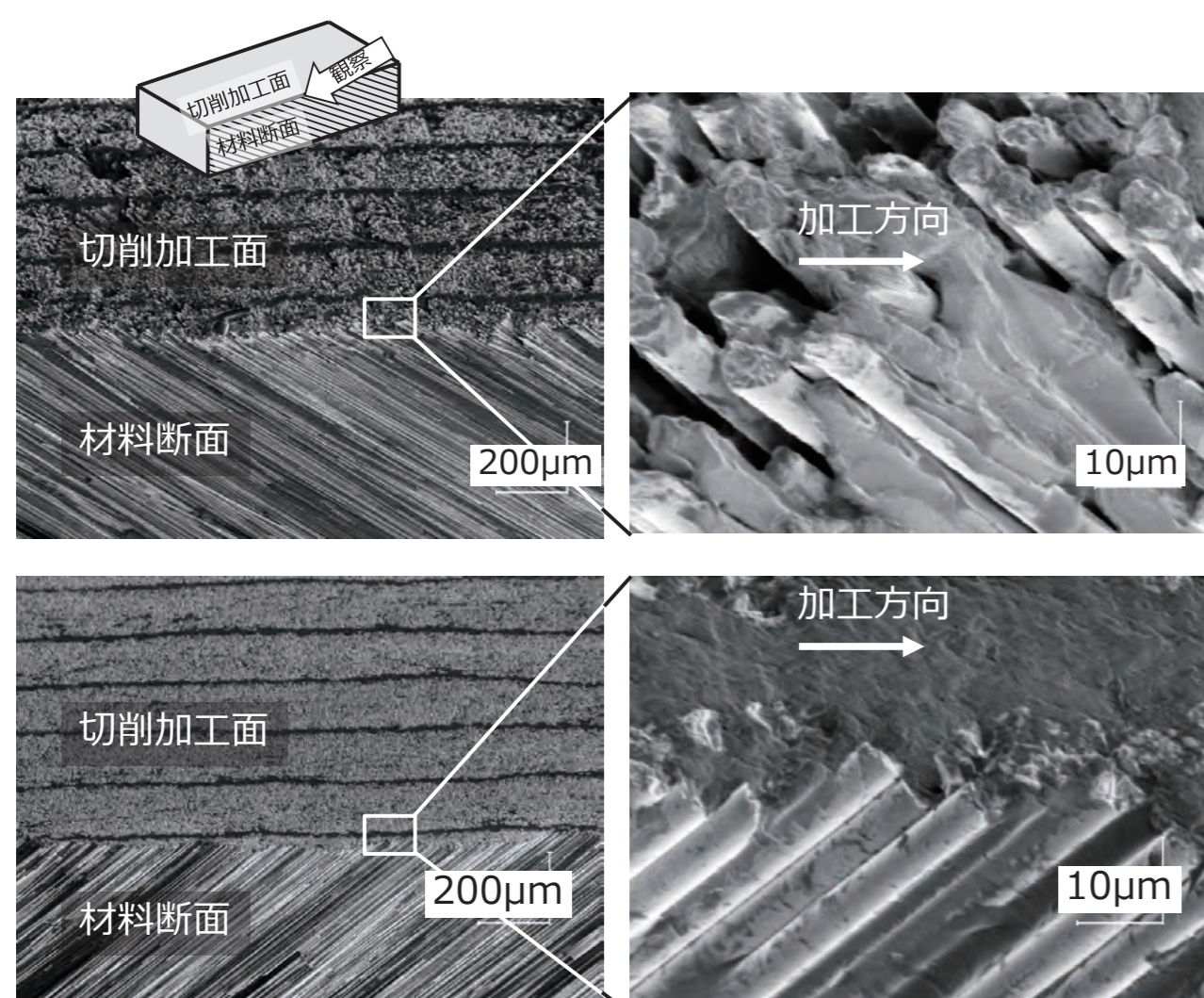
Department of Mechanical Engineering, Graduate School of Engineering

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

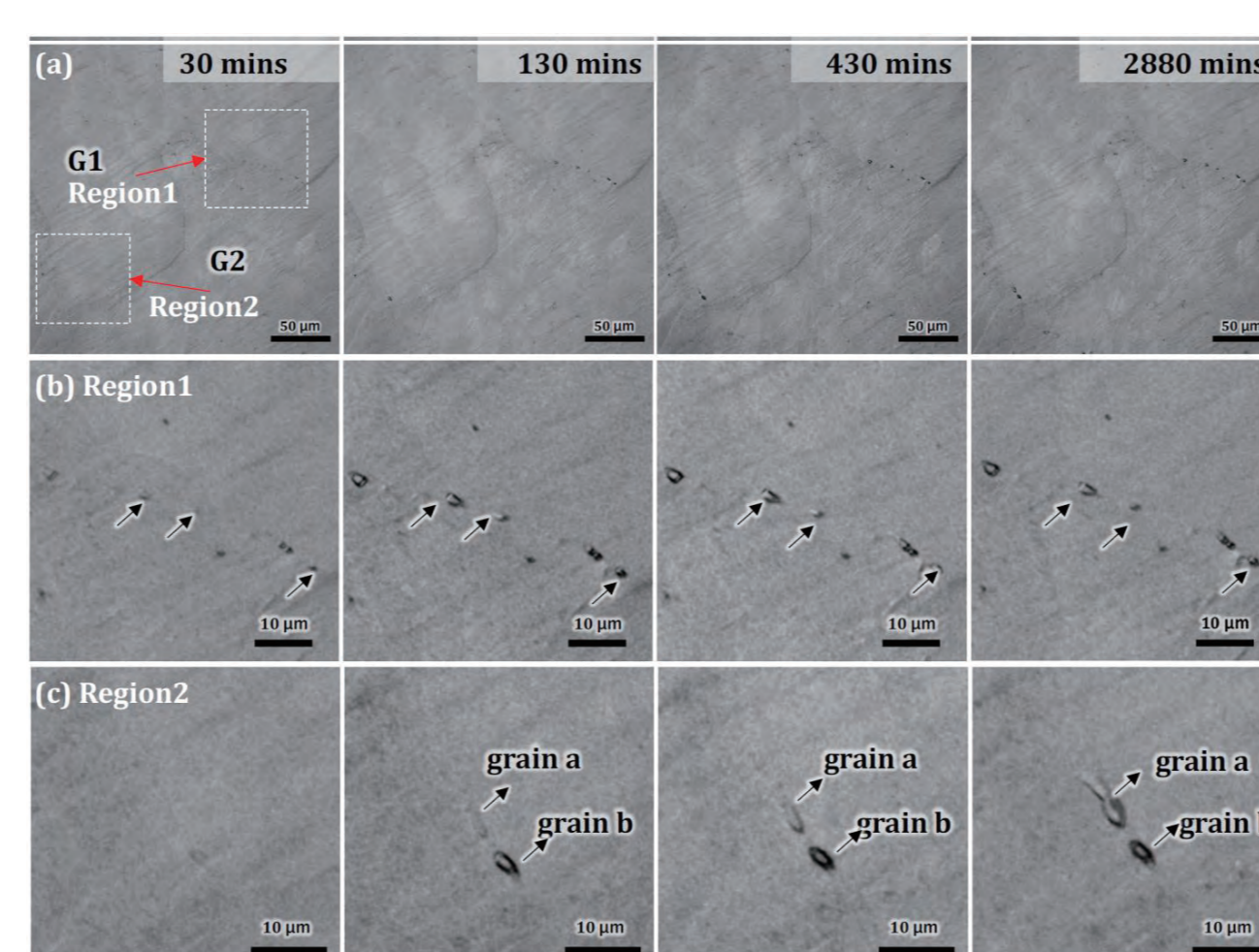
Machining/Assembly Technologies for Highly Efficient Production

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.

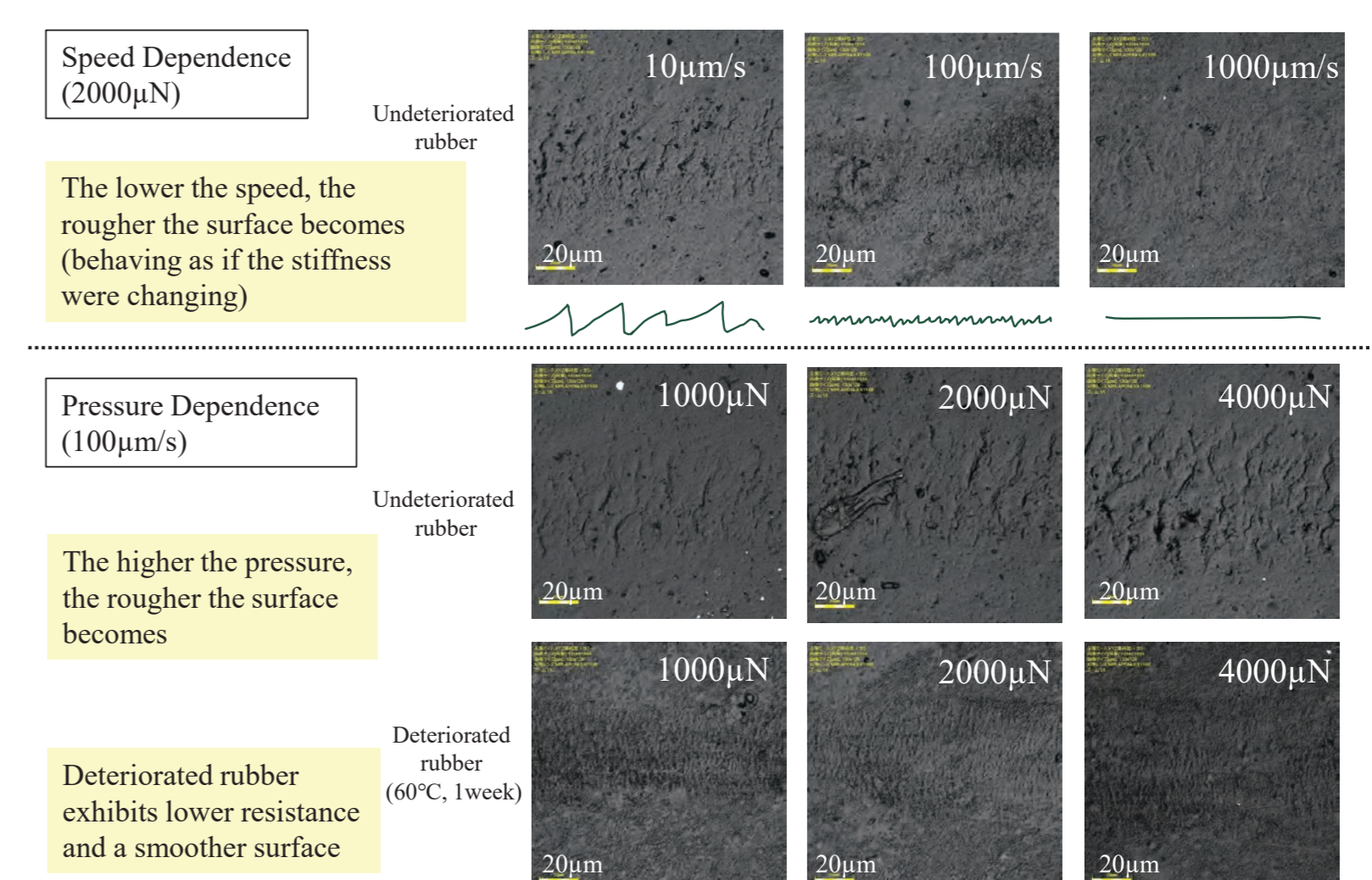
- ◆ Elucidation of Cutting Phenomena of CFRP
- ◆ Elucidation of the mechanism of residual stress generation on the machined surfaces
- ◆ Scratching with a single micro-projection to elucidate the fundamental processes of machining/wear phenomena
- ◆ Research on micro-shape of cutting edge and cutting performance
- ◆ Development of a contact-type tool setter with 10nm resolution
- ◆ Mechanism elucidation of lapping tool surface instability
- ◆ Research on ultra-high pressure coolant for machining difficult-to-cut materials



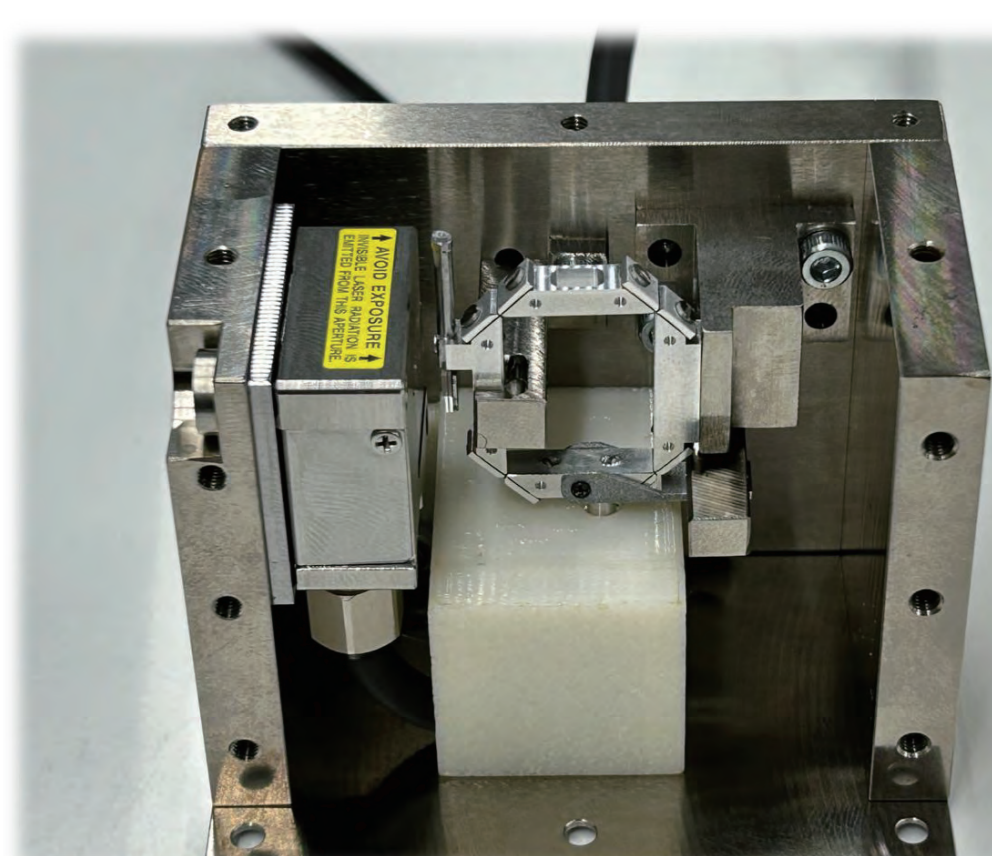
Cutting surface and material cross section of CFRP material



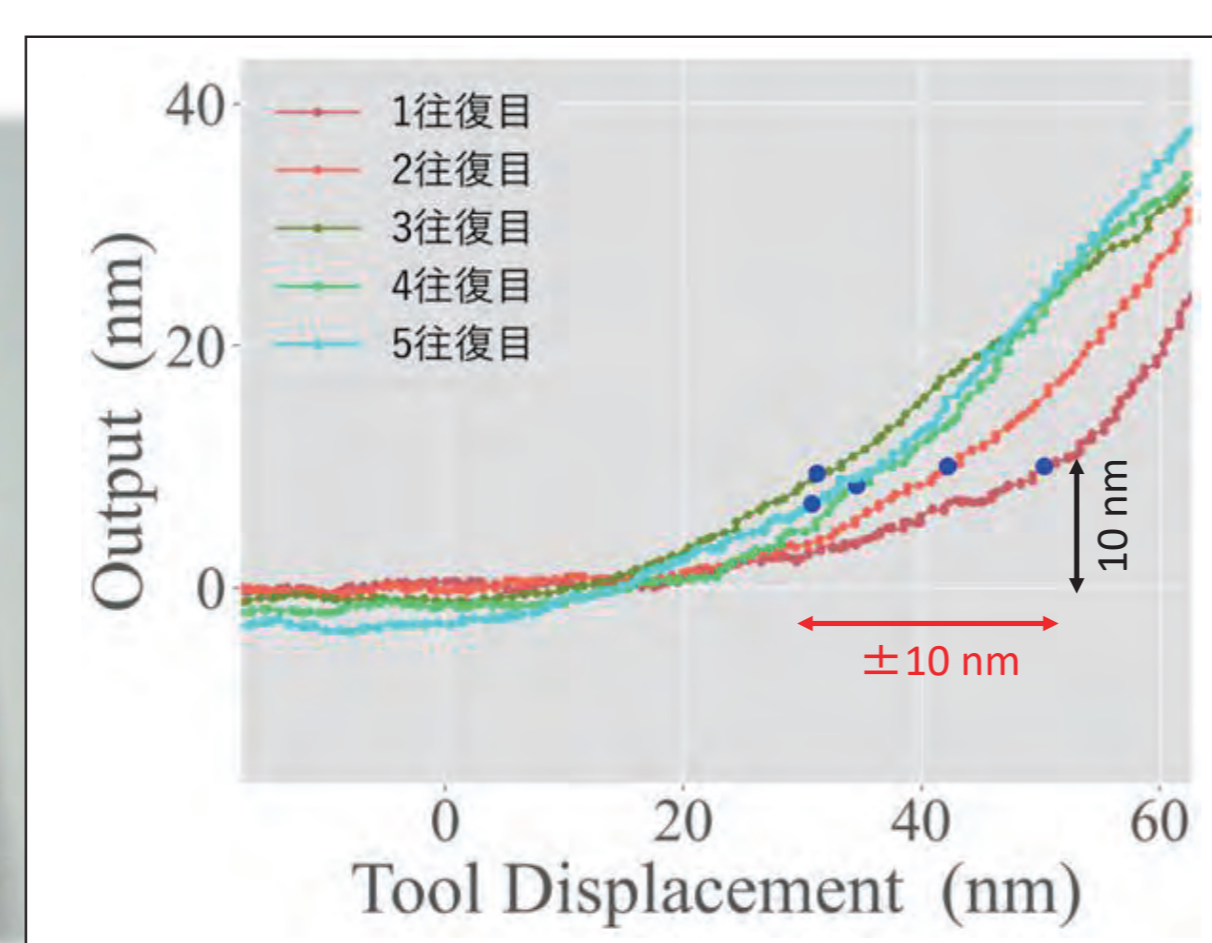
New grains growing on Sn substrate surface after polishing



Elucidation of the fundamental mechanisms of wear phenomena through scraping of the rubber surface

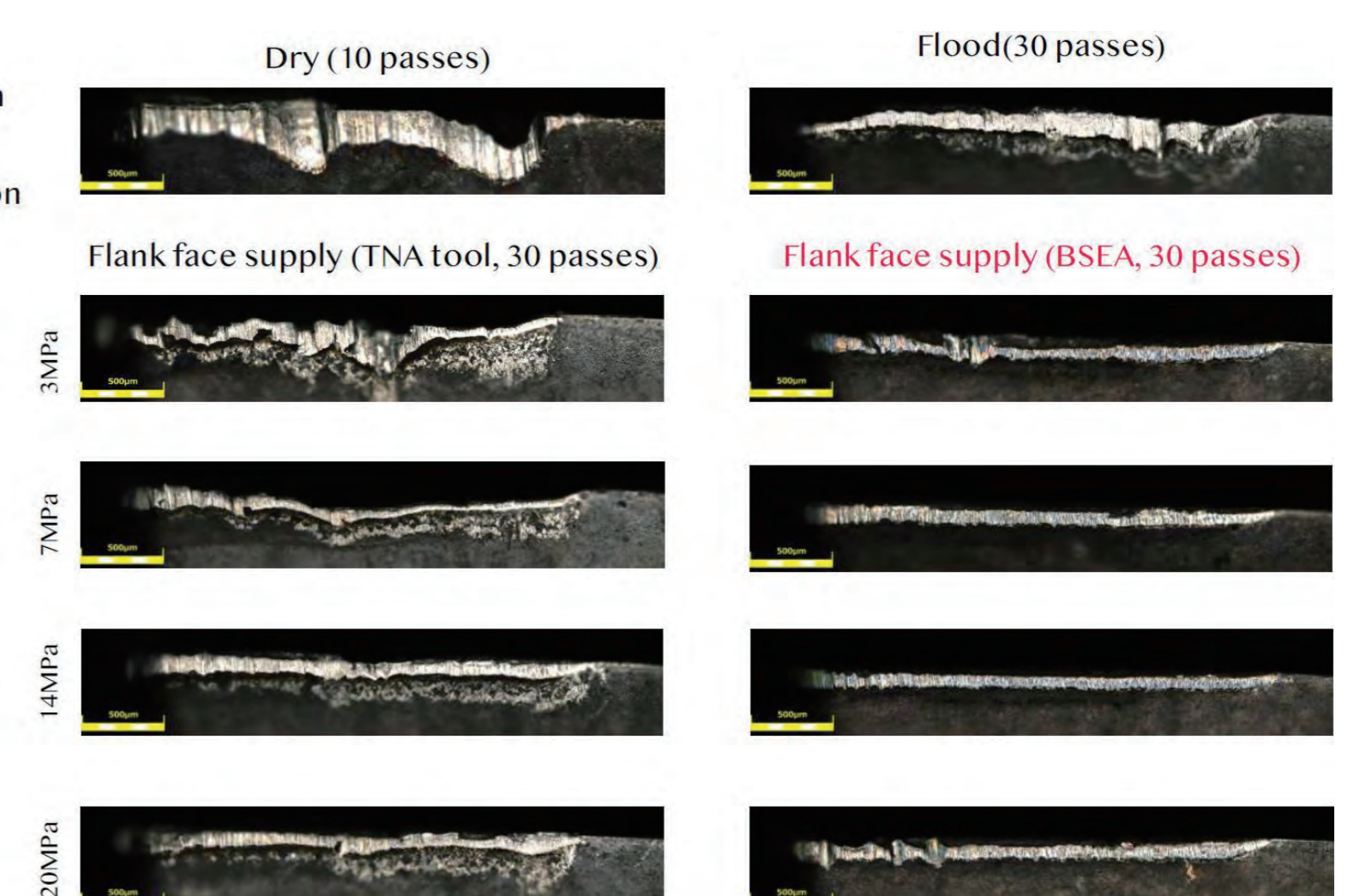
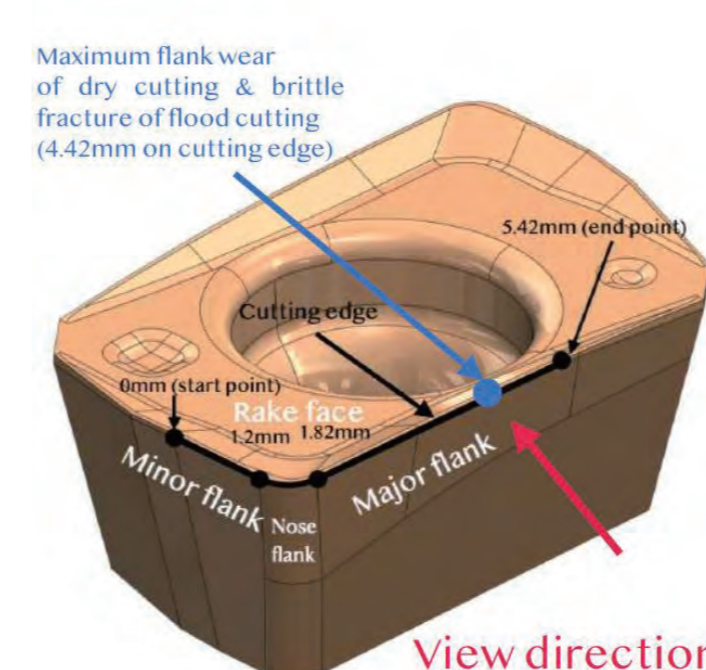


contact type tool length measuring system



Repeated test of tool contact detection

- Dry cutting is the most severely worn
- BSEA tool reduces the flank wear
- BSEA tool reduces the adhesion on flank face



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