

TSUCHIYA LAB.

[Machining/Assembly technologies for high-efficiency manufacturing]

Centre for International Research on MicroNano Mechatronics

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

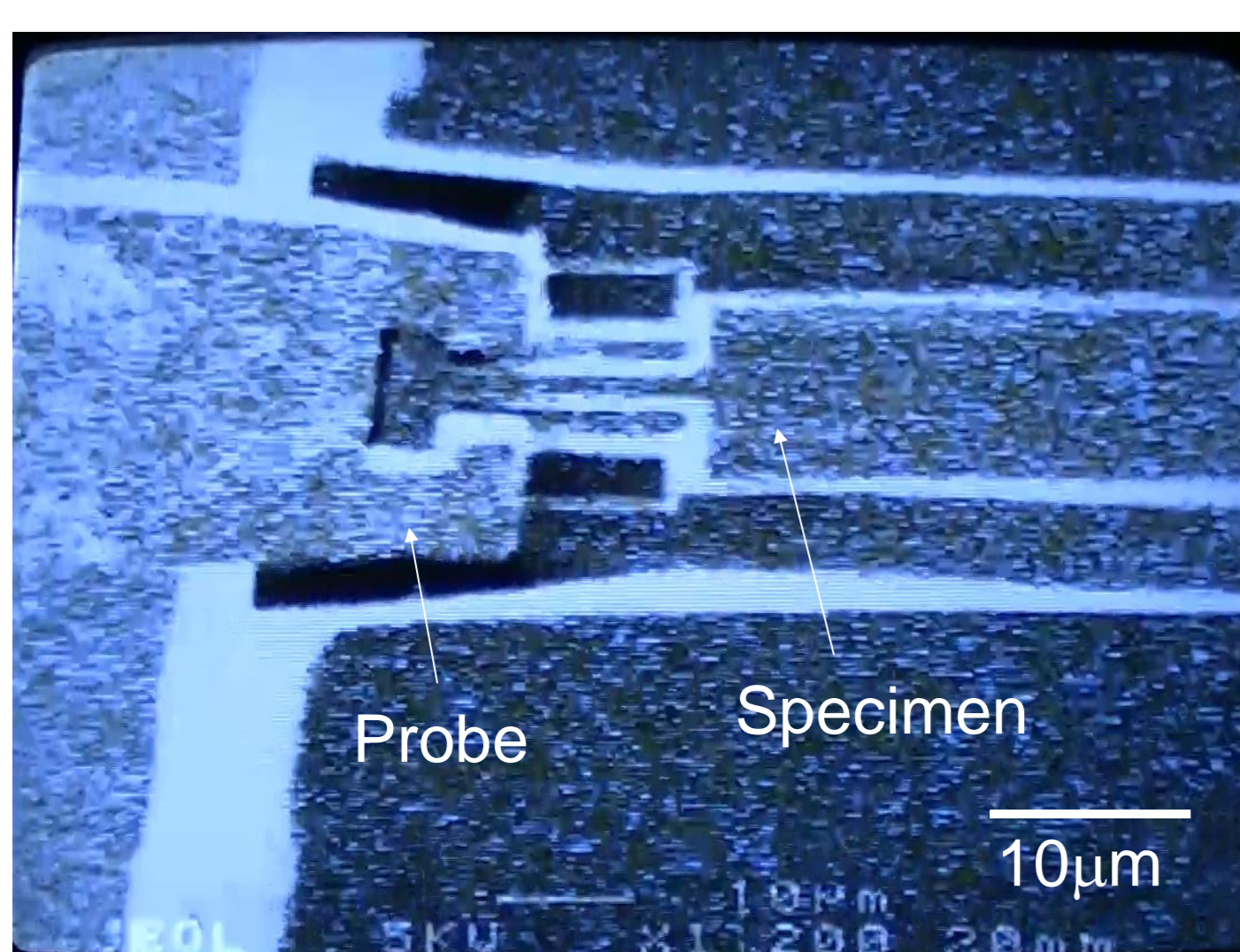
Applied Micro Manufacturing

Department of Mechanical Engineering

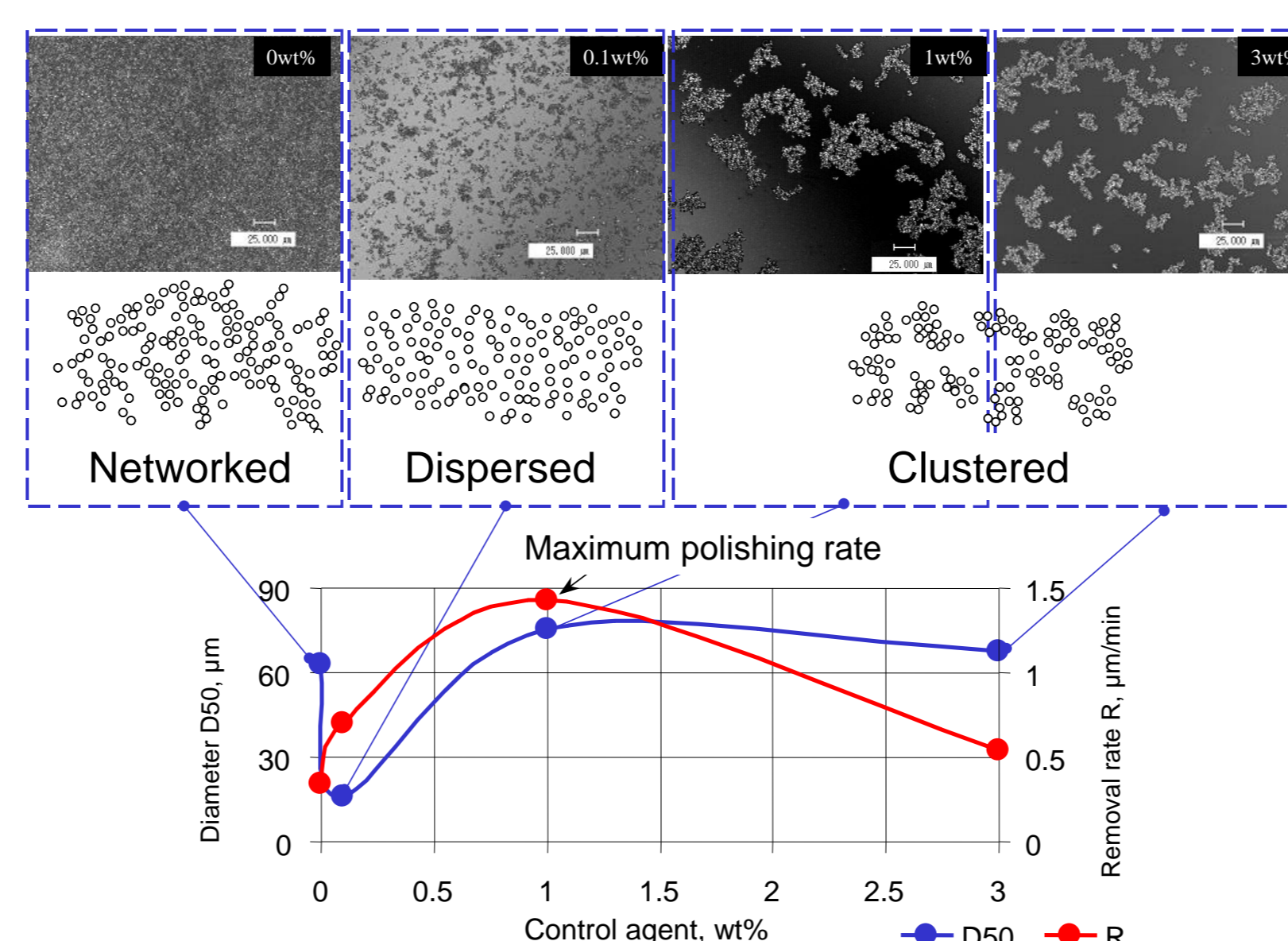
Machining/Assembly technologies for high-efficiency manufacturing

Our research concept is "production technology in micrometer/nanometer scale."
We are researching on mainly following three fields: (1) micro machining technology for generating micro shape, (2) micro handling technology of the micro structures, and (3) developing micro biomedical devices using the technologies above.

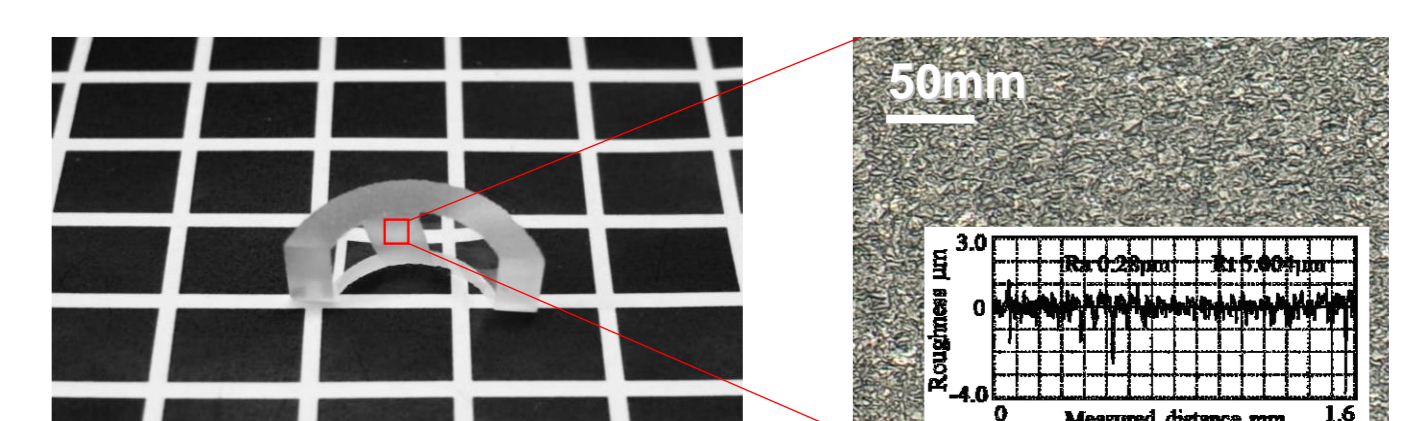
- ◆ Micro assembly under scanning electron microscope
- ◆ Development of multilayered metal micro-reactor with cooling channel
- ◆ Development on fixed abrasive tool with continuous pore
- ◆ Study on characteristics of polishing slurry with microscopic observations
- ◆ Micro-scale fatigue test system with real-time observation
- ◆ 3D mixing of powder using dividing channel
- ◆ Nano structure reproduction by heat flux control in injection molding
- ◆ Micro/Nano structures on the roll mold surface by composite plating



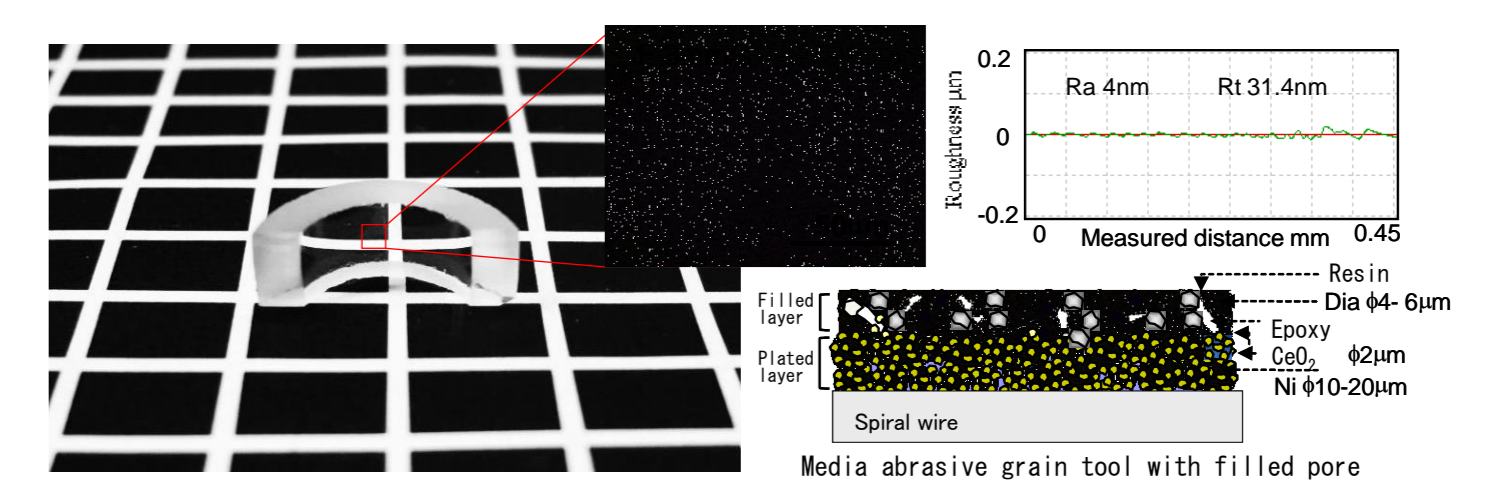
Fatigue test under real-time observation



Relationship between polishing rate and dispersibility of abrasive grains in polishing slurry.

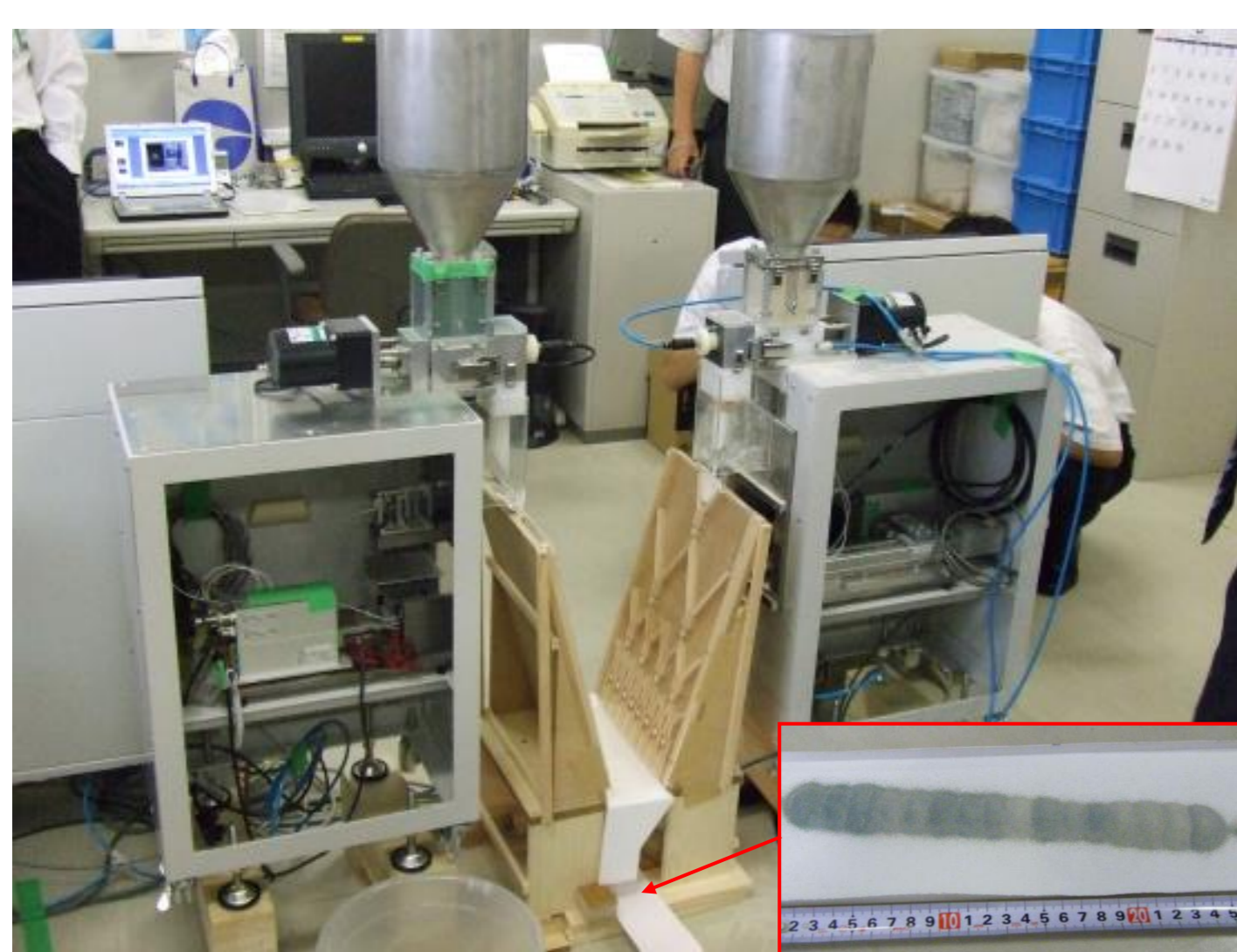


(a) Before polishing

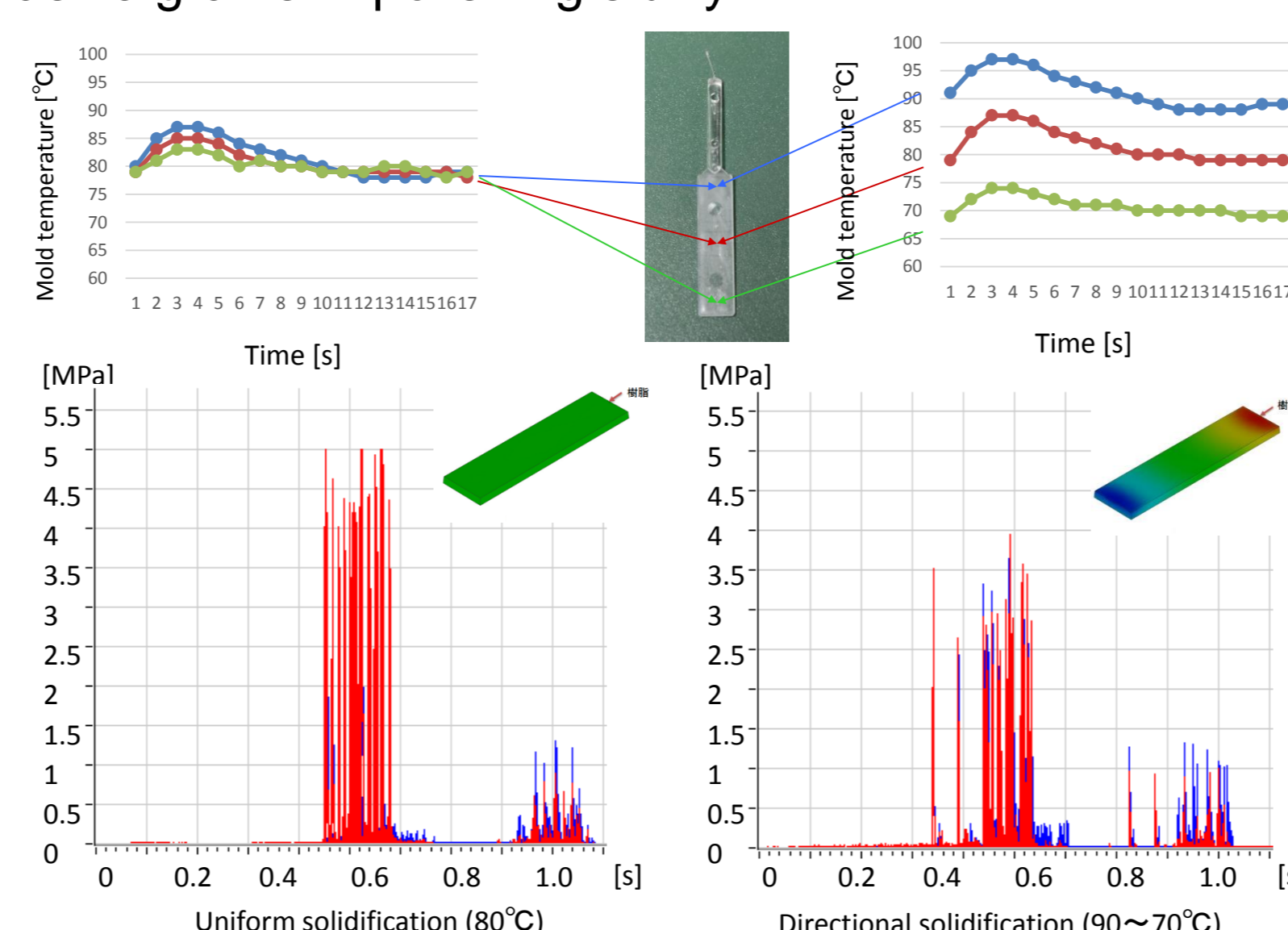


(b) After polishing

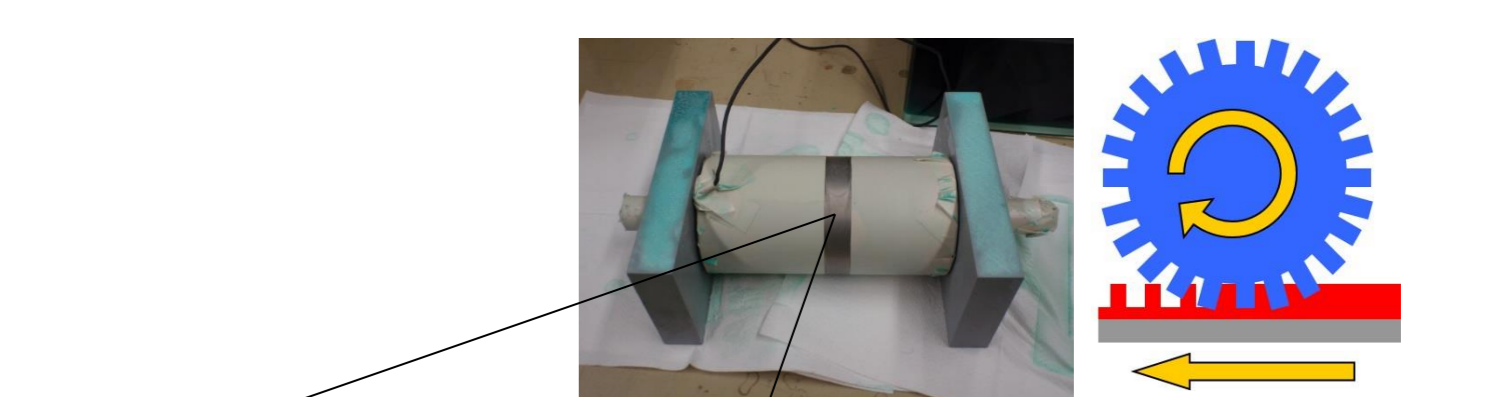
Fixed micro abrasive tool with super long life



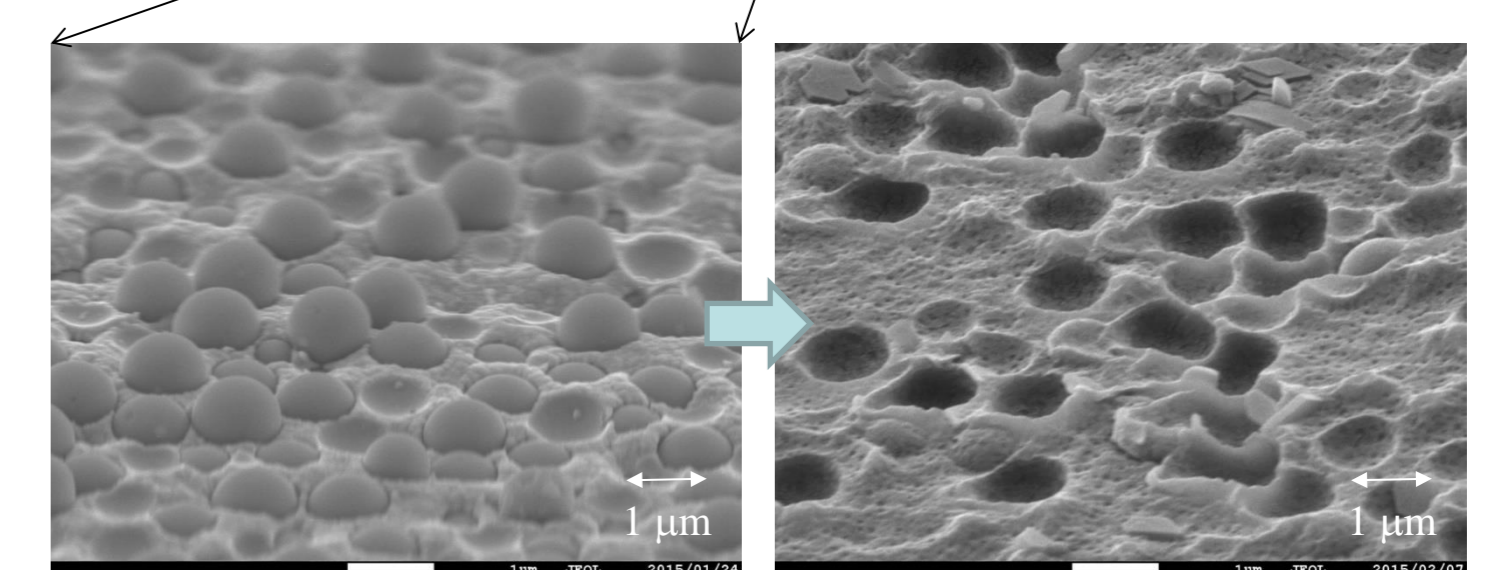
3D mixing system of powder using dividing channel, and mixture of Al_2O_3 and SiC.



Reduction of mold release failure using directional solidification



Roll mold surface



Imprinted shape on a plastic film surface by composite plating