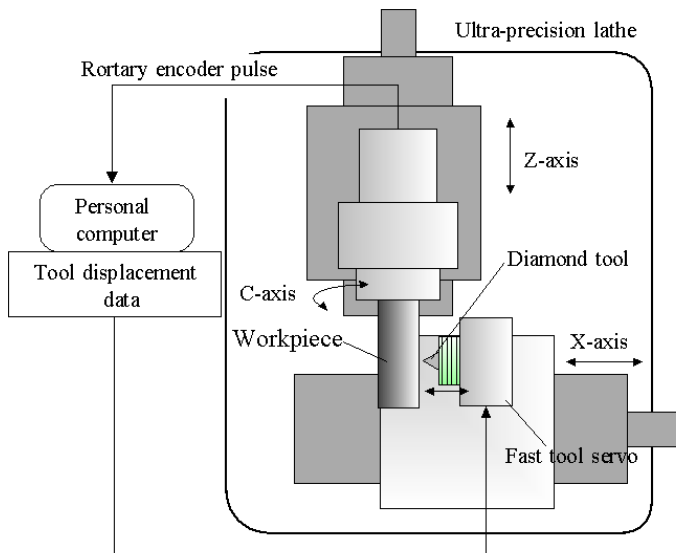


Generation of microstructured pattern to cylinder surface

Purpose

Generation of microstructured pattern to cylinder surface by diamond turning with fast tool servo



Schematic of the system for micro pattern generation

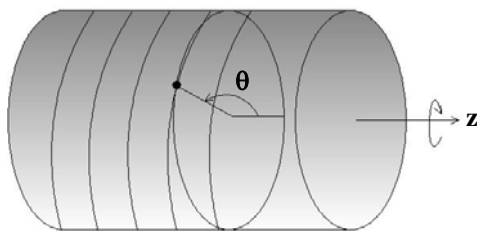
<Machinig system>
 Rotation and principal-axis sending of C- axis are synchronized, FTS control the depth of cutting on a spiral locus.

A depth of cutting

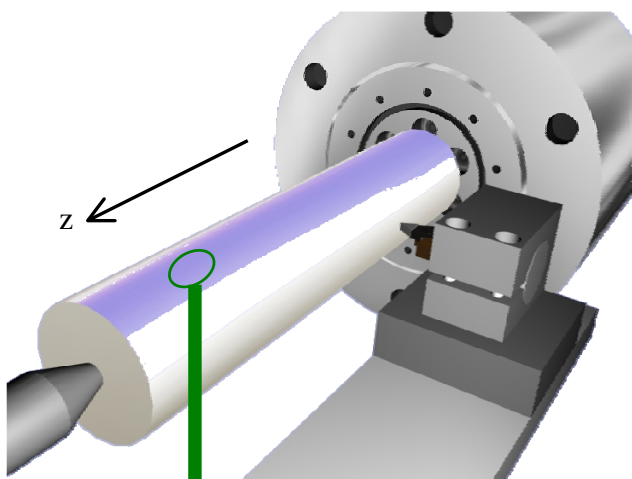
$$f(\theta, z) = A \sin\left(\frac{2\pi r}{\lambda} \theta\right) + A \sin\left(\frac{2\pi}{\lambda} z\right)$$

Amplitude $A=150\text{nm}$

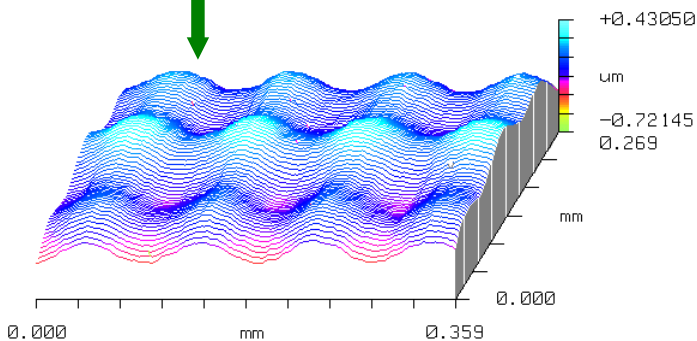
Wavelength $\lambda=150\mu\text{m}$



Coordinate configuration of the workpiece



Machining image



3-D view of the machined surface



Miniaturization of FTS