1. Friction Force Microscope (FFM)
   - About FFM: A kind of scanning probe microscope
     Visualization method of friction properties on a nano scale
     Standard equipment in commercial atomic force microscope (AFM)
   - Application: Measurement of micro/nano tribological properties
     (friction, lubrication, wear)
     Identification of constitutive materials using friction properties

2. Improvement accuracy of FFM
   - Problem: Mechanical interference reduces the accuracy of FFM
   - Solution: Different parts independently respond to lateral and vertical forces => Dual-axis probe

3. Fabricated probe
   - Conventional probe
     - Scan direction
     - Micro cantilever
     - Lateral force: deflection of lever
     - Vertical force: torsion of lever
     - Accuracy reduction due to interference
   - Vertical force: torsion of torsion beam
     - Tip movement
   - New structure
     - Vertical force: torsion of torsion beam
     - Tip movement
   - Improvement of robustness against vibration noise => Small size
   - Point 1:
     - Detection of lateral displacement of probe => Movement of low reflection pattern on probe
   - Point 2:
     - Improvement of robustness against vibration noise => Small size

4. Results of simultaneous AFM/FFM
   - Probe installed in commercial AFM (Nanoscope IV, Veeco) can provide highly accurate and resolved FFM images.

5. Patent status & Patent owner contact
   - Patent license is available.
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