



TOHOKU
UNIVERSITY

International conference on global/local innovations
for next generation automobiles

October 9, 2014

Sendai International Center

Development of Non-destructive Evaluation Technology and Functional Friction Materials for Safety/Relief and Energy Saving

Toshiyuki TAKAGI, Tetsuya UCHIMOTO,
Hiroyuki MIKI, Hiroyuki KOSUKEGAWA

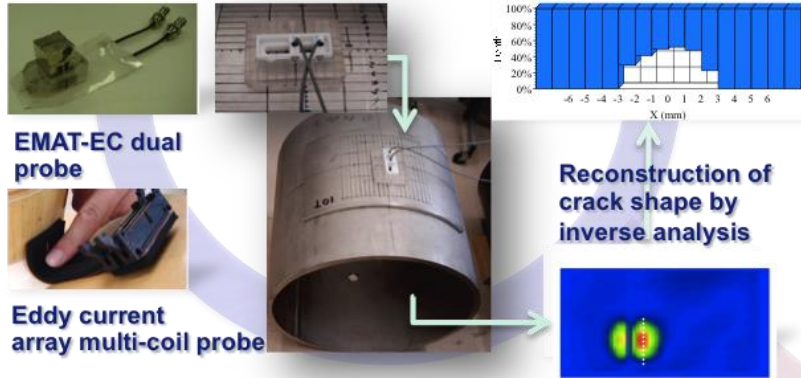
Innovative Energy Research Center,
Institute of Fluid Science
Tohoku University



Evaluation and Optimization of Maintenance Activity of Power Plants, Transportation and Infrastructures

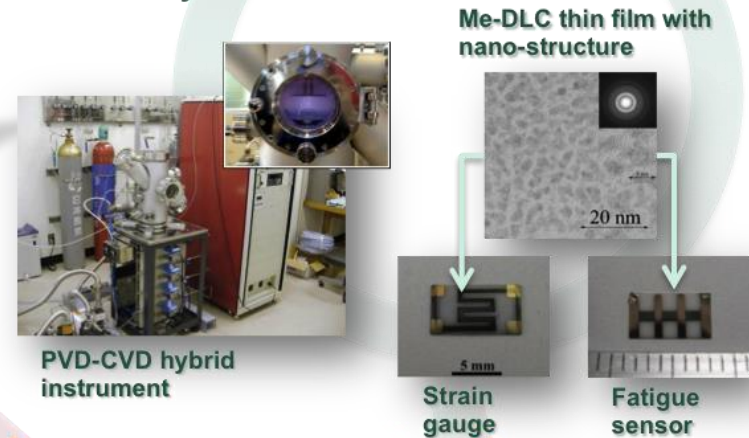
NDT and Monitoring Techniques

Quantitative Evaluation of Structural Materials and Systems in Power Plants based on Electromagnetic Nondestructive Evaluation



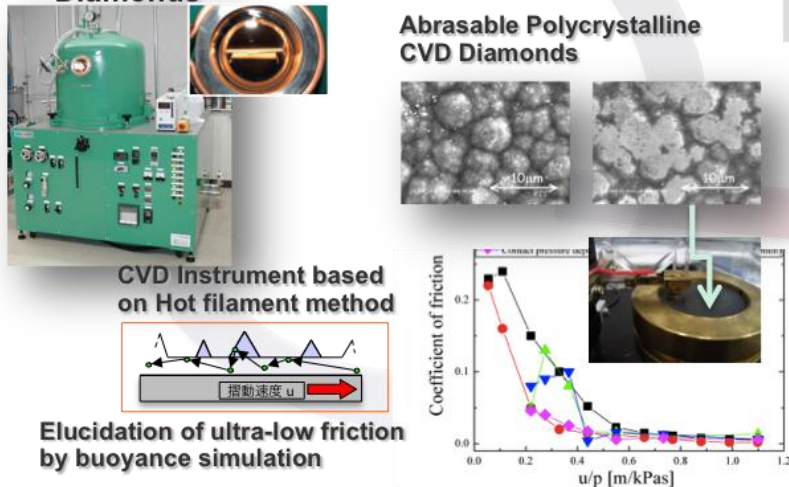
Novel Thin Film Sensors

Development and evaluation of the multifunction sensor using Me-DLC/DLC multilayer



Unlubricated Slider

New Type of Sliding Contact” Using Easily Abrasable Polycrystalline CVD Diamonds



Industrial Applications

Maintenance for power plants



NDT & Monitoring for plants



100 % Inspection for castings



Reduction of friction in automobile parts



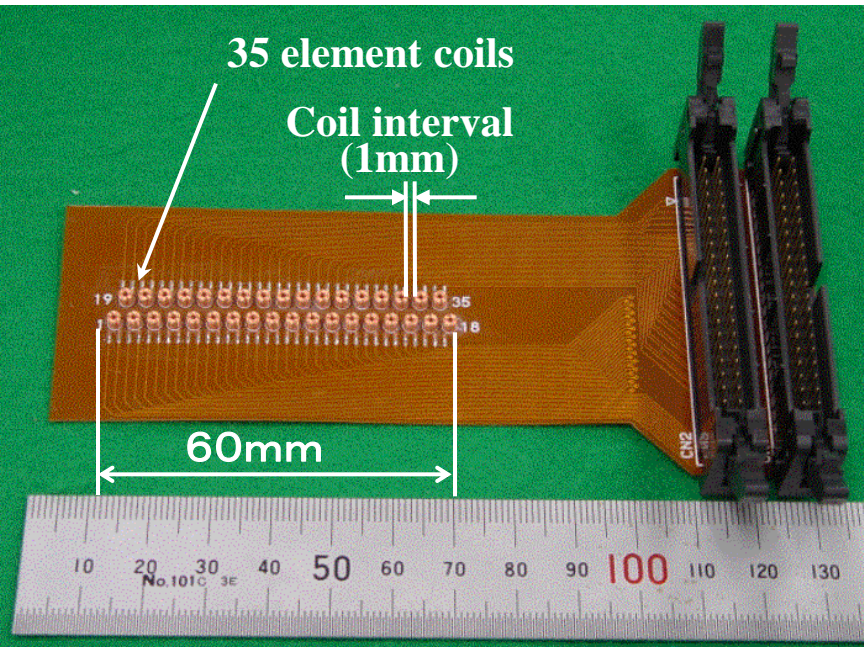
Novel slider based on new type sliding contact



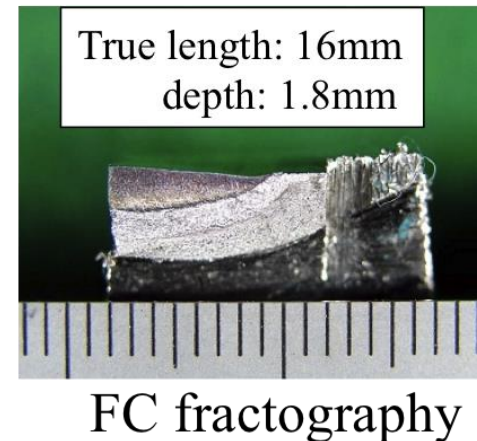
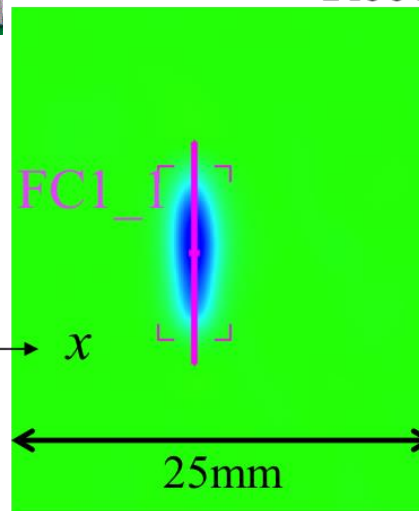
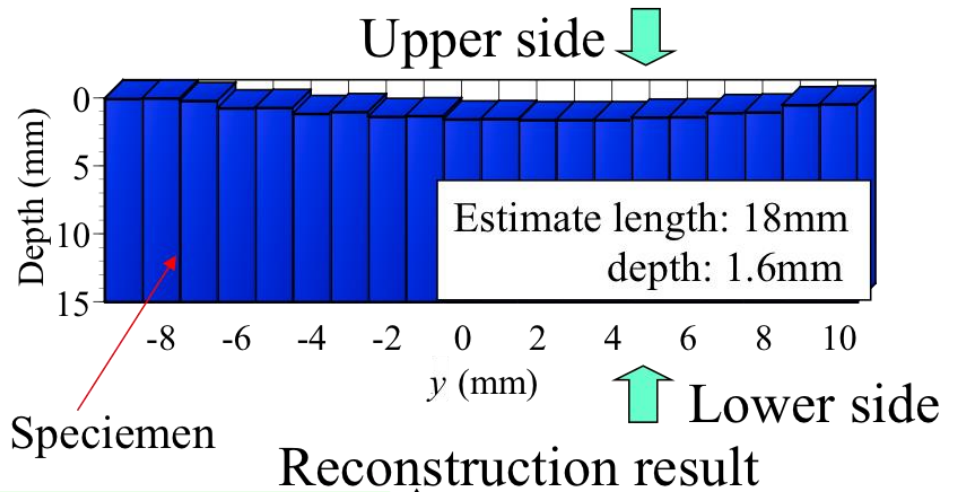
Development of next generation lubricated films of aerospace instrument



Flexible Multi-coil ECT sensor



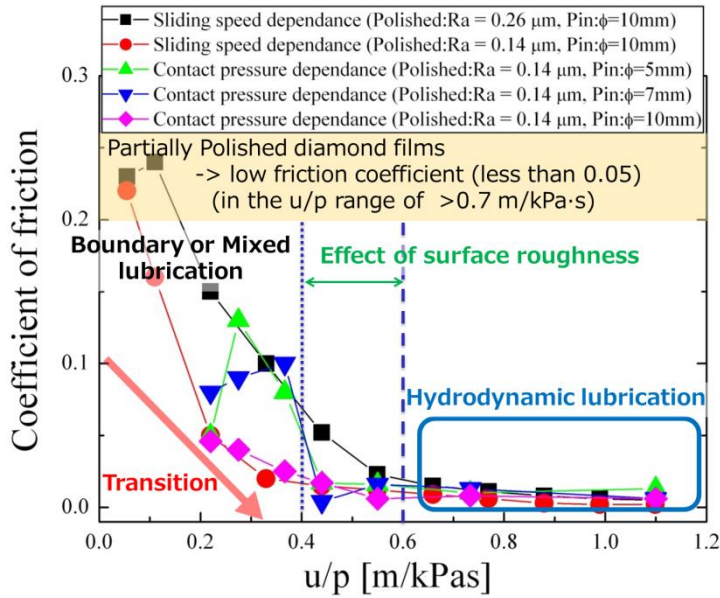
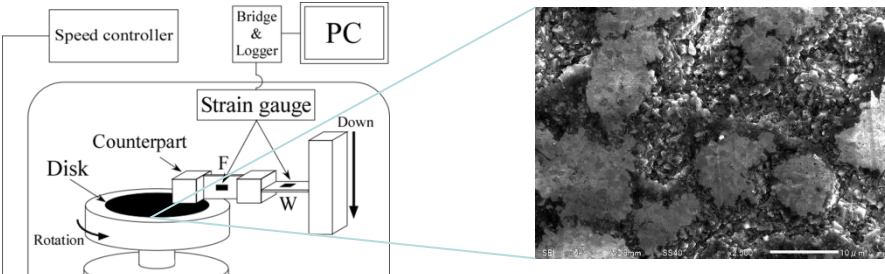
Reconstruction of Crack Shapes: FC



Advanced Carbon Coatings: Toward a Smart Coatings

Unlubricated Slider

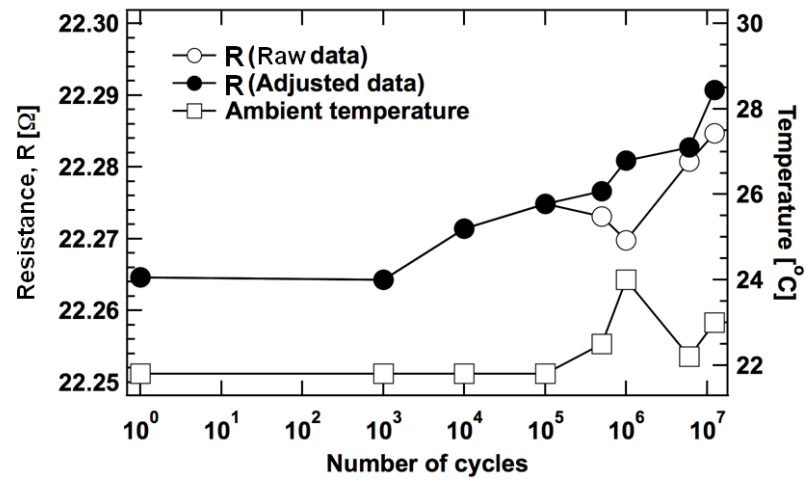
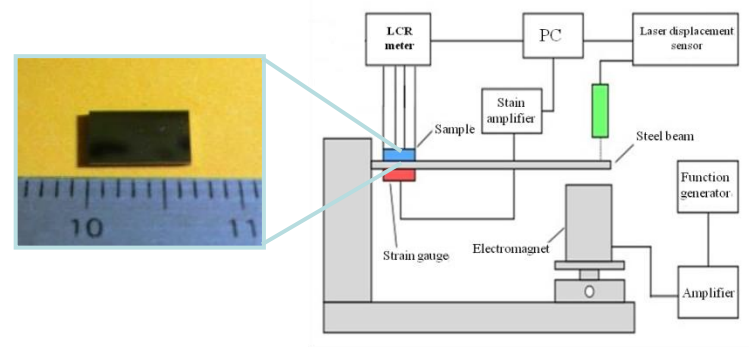
Hydrodynamic lubrication transition of partially polished CVD diamond film



Super low friction are observed on partly polished diamond films.

Novel Thin Film Sensor

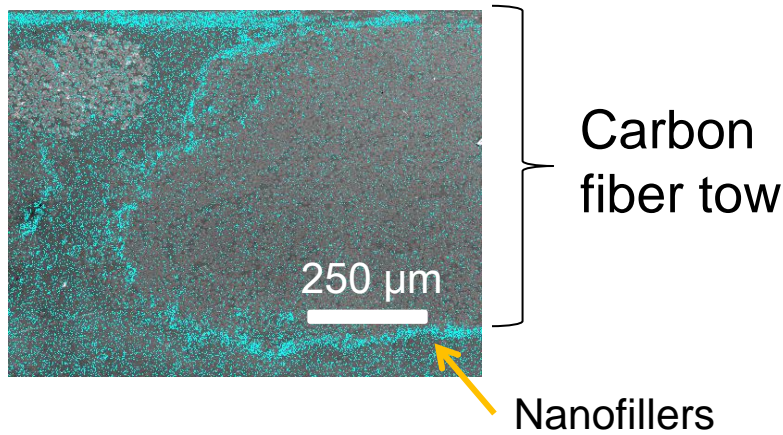
Evaluation of fatigue properties of Mo-DLC coatings



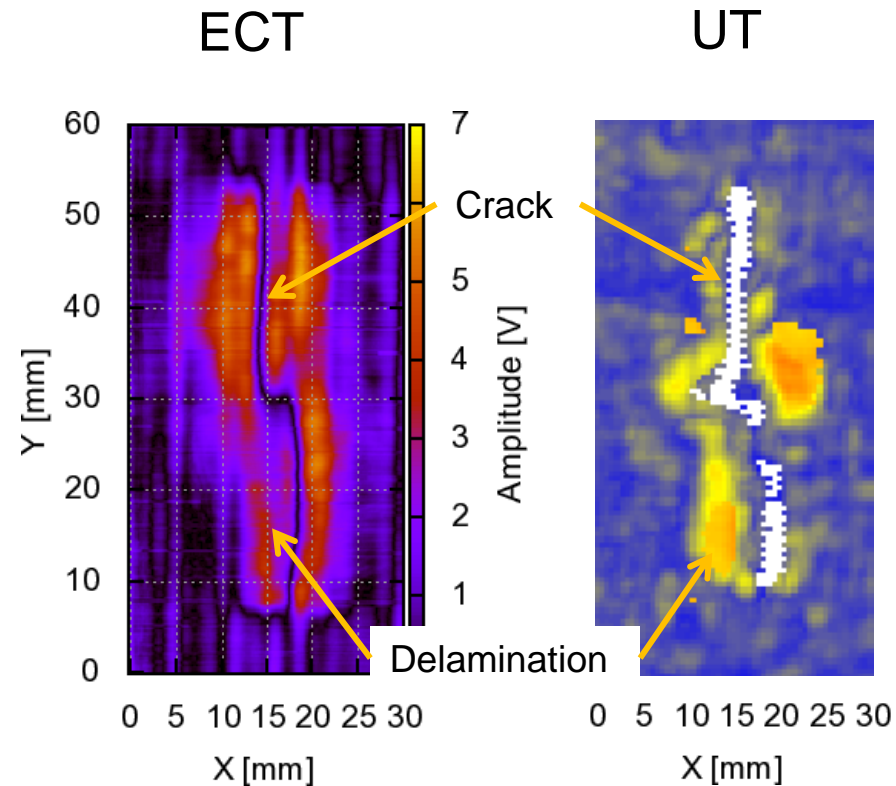
Mo-DLCs show possibilities for a fatigue sensor.

Mechanical improvement and NDT for Carbon Fiber Reinforced Plastics

Improvement of mechanical properties of CFRP with nanofillers



NDT for CFRP after impact testing with ECT and ultrasound testing (UT)



Energy absorption rate [%] after impact

