

Internship at Kyushu University and Current State of PhD Thesis

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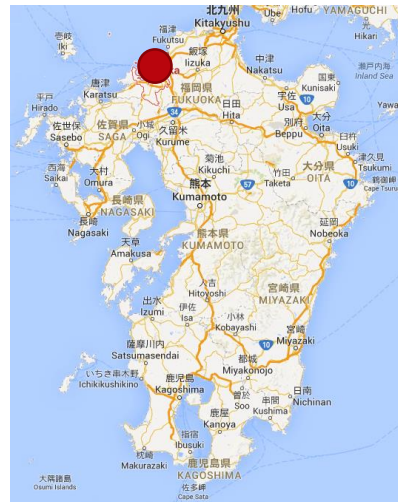
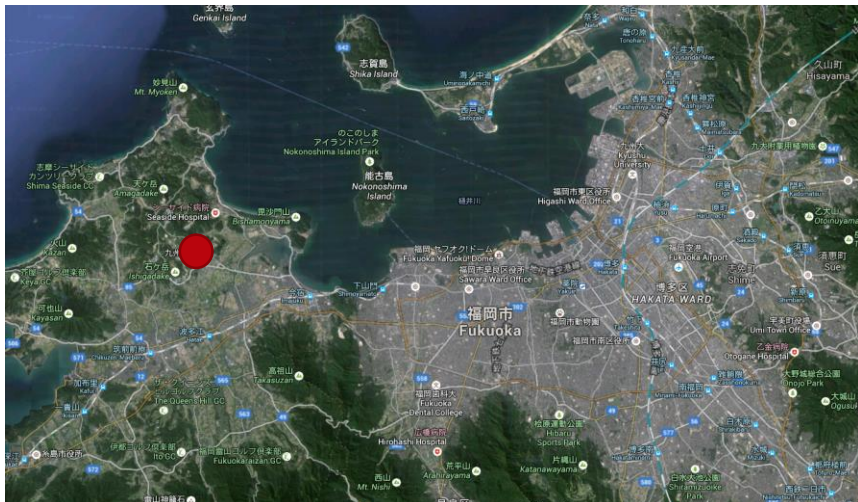
Brno University of Technology

IMID seminar 2015, FME BUT
4th November 2015, Brno, Czech Republic

Internship at Kyushu University

Kyushu University, Fukuoka, Japan

- 1st internship (2013/06 – 2013/08)
- 2nd internship (2015/07 – 2015/09)
- ≈ 2 300 Academic staff
- ≈ 21 000 Students
- 6th best university in Japan (≈ 90 universities)

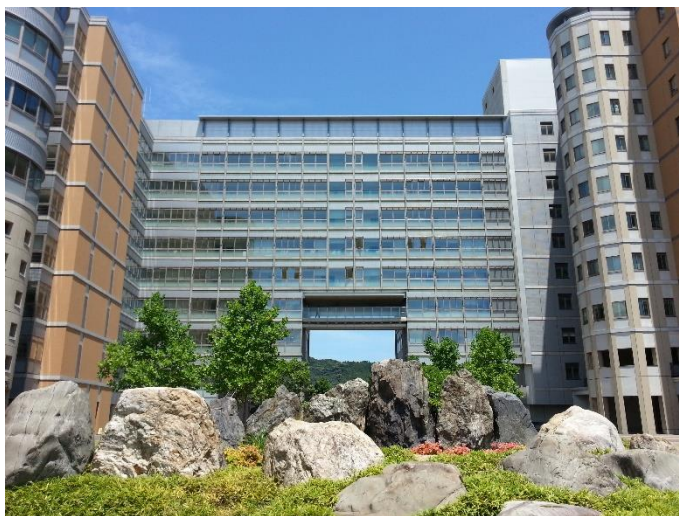


Internship at Kyushu University

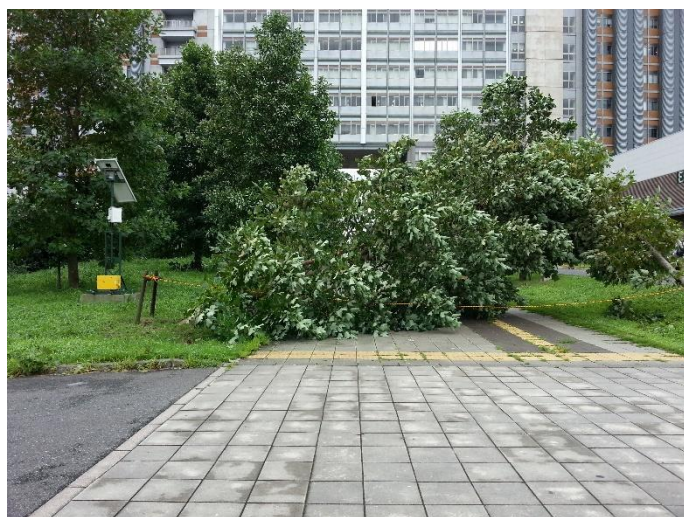


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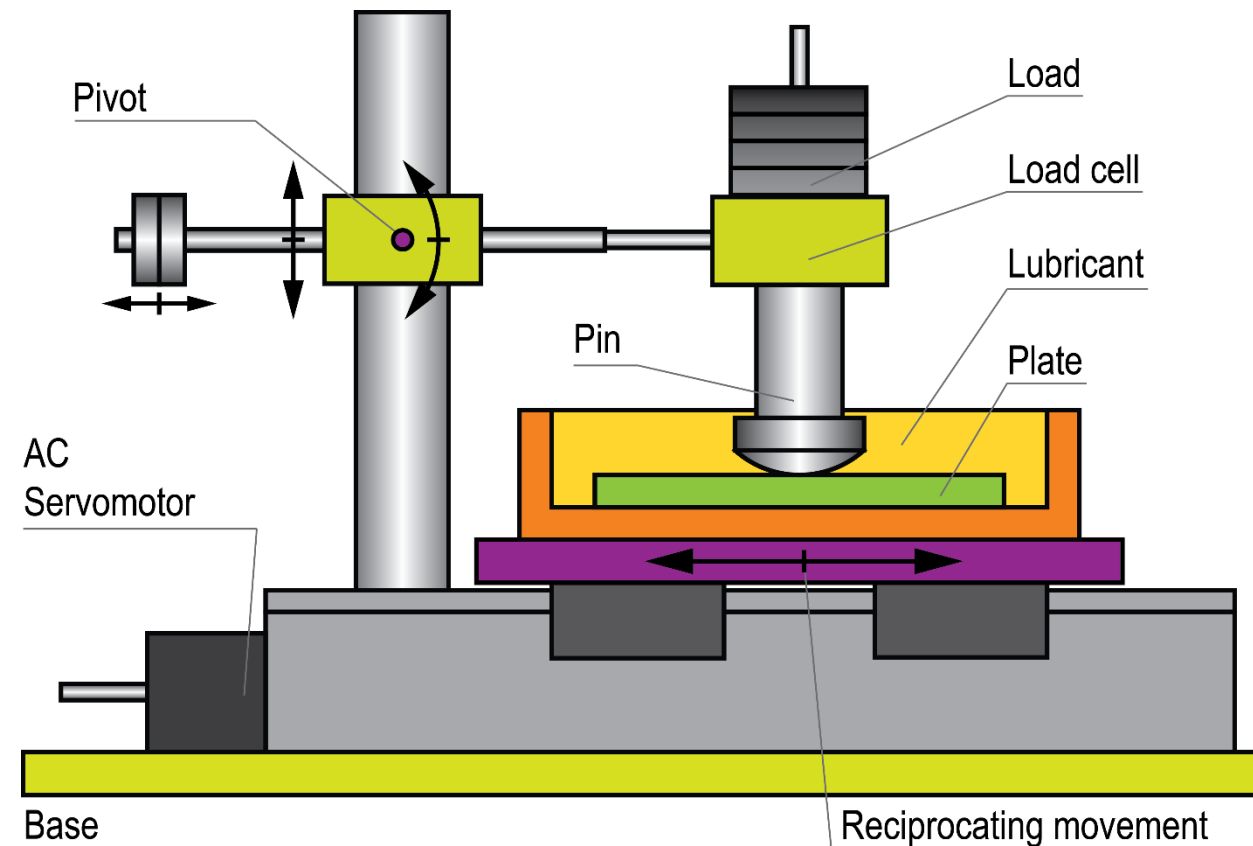


Internship at Kyushu University



Internship at Kyushu University – Research programme

- The examination of the protein lubrication mechanisms
- Frictional behavior of CoCrMo-UHMWPE contact pair
- Protein adsorption behavior
- Pin-on-plate reciprocating friction test
- Ellipsometry (adsorption – UHMWPE)
- FTIR (adsorption – UHMWPE + CoCrMo)



Current state of PhD thesis – Time plan

- ✓ The current state of the art
- ✓ Experimental method
- ✓ Methodological approach
- ✗ Measurements (75%)

Results publication

- ✓ • Fluorescent method
- ✗ • Methodology for protein film mechanism evaluation



Current state of PhD thesis – Publications

- TKACHENKO S., NEČAS D., DATSKEVICH O., ČUPERA J., SPOTZ Z., VRBKA M., KULAK L., FORET R. Tribological performance of Ti–Si based in situ composites. *Tribology Transactions*. 2015, 1-40.
(IF = 1.349)
- KOŠŤÁL D., NEČAS D., ŠPERKA P., SVOBODA P., KŘUPKA I., HARTL M. Lubricant Rupture Ratio at Elastohydrodynamically Lubricated Contact Outlet. *Tribology Letters*. 2015, 59(3), 1-9.
(IF = 1.739)
- VRBKA M., NEČAS D., BARTOŠÍK J., HARTL M., KŘUPKA I., GALANDÁKOVÁ A., GALLO J. Stanovení součinitele tření hlavic a jamek TEP kyčle. *Acta Chir. orthop. Traum. čech*. 2015, 82(5), 341-347.
(IF = 0.388)
- VRBKA M., NEČAS D., HARTL M., KŘUPKA I., URBAN F., GALLO J. Visualization of lubricating films between artificial head and cup with respect to real geometry. *Biotribology*. 2015, 1-2: 61-65.

Current state of PhD thesis – Publications (PhD Thesis)

- NEČAS D., ŠPERKA P., VRBKA M., KŘUPKA I., HARTL M. Film thickness mapping in lubricated contacts using fluorescence. *MM Science Journal*. 2015. **(ACCEPTED 10/2015)**
- Film thickness measurement in compliant contacts using fluorescence **(Complete data)**
- Friction and adsorption behavior of metal-UHMWPE contact **(95% data - Kyushu University)**
- Protein film formation in ceramic on glass contact pair **(75% data)**
- NEČAS D., VRBKA M., URBAN F., KŘUPKA I., HARTL M., GALLO J. An experimental investigation of lubricant film formation in artificial hip joints. The 8th International Biotribology Forum and The 36th Biotribology Symposium. 2015, Yokohama, Japan

Facebook

- Number of fans
 - 09/2014 – 479
 - 10/2015 – 767
 - 656 Czech Republic
 - 111 Foreign countries (22)
Egypt, Vietnam, Thailand, South Korea...
- Since 09/2015 – 124 posts
- Average reach \approx 700 – 900 FB users
- Record – A1 destruction (reach 21 480 FB users)
 - 385 likes



Thank you for your kind attention!

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