



Swedish Research School in Tribology

Research school course plan

Title: Nano tribology

Points: 4 hp

Time: 27-29 April 2011

Objectives:

A student that has completed the course shall have the ability:

- to understand the basics of friction, surface energy and surface forces
- to be able to measure surface forces
- to be able to simulate and predict surface forces

Content:

Topics treated are:

Mechanical Properties of Solids and Real Area of Contact;
Friction;
Surface Energy and Capillary Pressure;
Relationship Between Surface Energy and Surface Forces;
Physical Origins of Surface Forces;
Measuring Surface Forces;
Lubrication in Tight Spots;
Atomistic Origins of Friction;

Teaching:

The course will be conducted through lectures, laboratory exercises and assignments.

Prerequisites:

General course in tribology, mechanics and materials technology

Examination:

web based; 2 weeks after the week when the course was given

Grading:

Pass or Fail

Examiner:

Professor Ulf Olofsson / Professor Mark Rutland

Department of Machine Design, Royal Institute of Technology /
Department of Surface Chemistry Royal Institute of Technology

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Literature:

Mate, C. Mathew, Tribology on the Small Scale, OUP Oxford (2007)