

New insights into tribology and advances in electron microscopy

11th TWC International Wear Seminar
October 31st 2019, Vapriikki Museum Centre, Tampere

The seminar jointly organized by Tampere Wear Center and Tampere Microscopy Center concentrates on the possibilities of advanced microscopy techniques in materials science and tribology. The seminar gives a wide perspective on various microscopy techniques, including SEM, TEM, EBSD, and Raman spectroscopy, and on practical aspects of their utilization.

Tampere Microscopy Center - TMC

Professor Minnamari Vippola

Faculty of Engineering and Natural Sciences, Tampere University

Tampere Microscopy Center

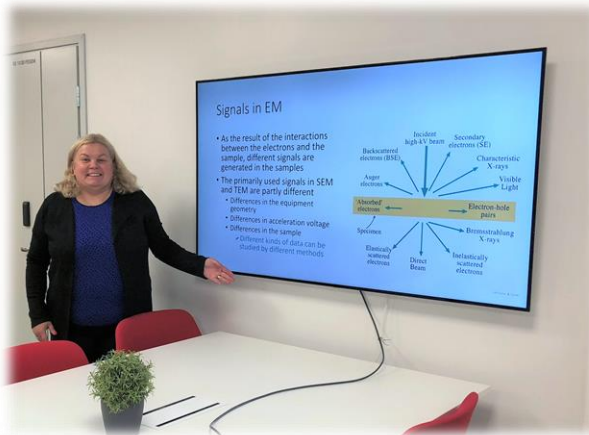
New microscopy research environment (since 2018) for analyzing microstructure and chemical composition of all kind of materials down to atomic scale.

Center provides equipment and service for researchers and students in Tampere University and through research collaboration also for other research institutes and industry.

Staff:

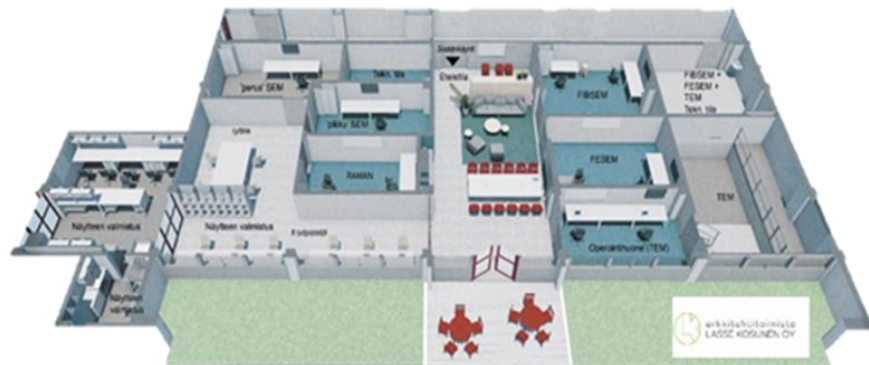
- TMC head, professor Minnamari Vippola
- Senior Scientist Mari Honkanen
- Staff Scientist Turkka Salminen

Personnel of TAU laboratory services when needed.



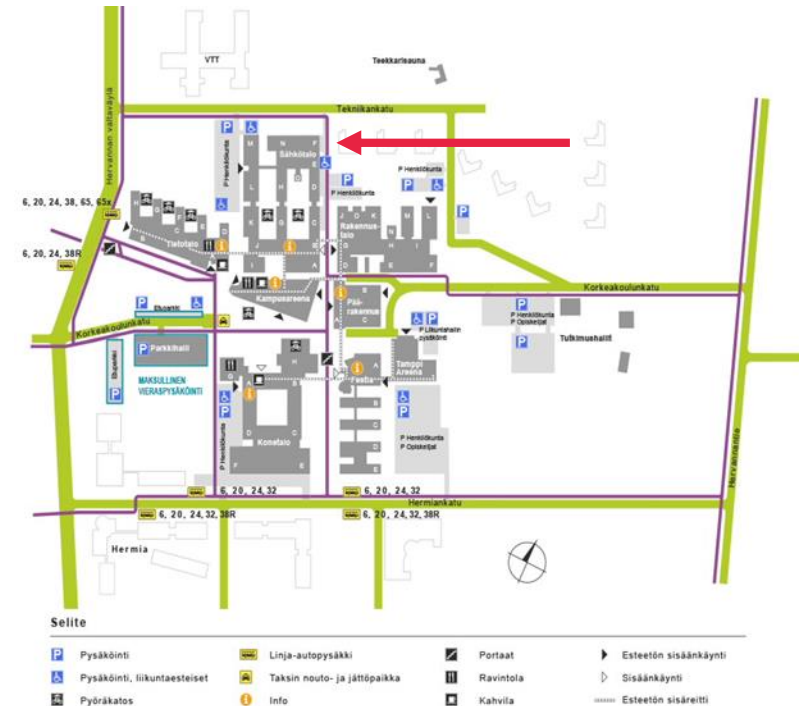
Research at TMC

- Equipment in the TMC can be used either by the TAU researchers or by the TMC staff.
- A proper authorized training is required to use the instruments. (Training is given by TMC staff)
- TMC aims not to be a full service imaging center for TAU researchers, but rather a place where the researchers can come to work and collaborate with high-class instruments.
- If there is a need for TMC research facilities for users outside TAU (academia or industry), TMC provides imaging and analysis services. There are separate instrument and operation fees for such services. In the case of such needs contact TMC staff. TMC administrates the services aimed outside TAU.

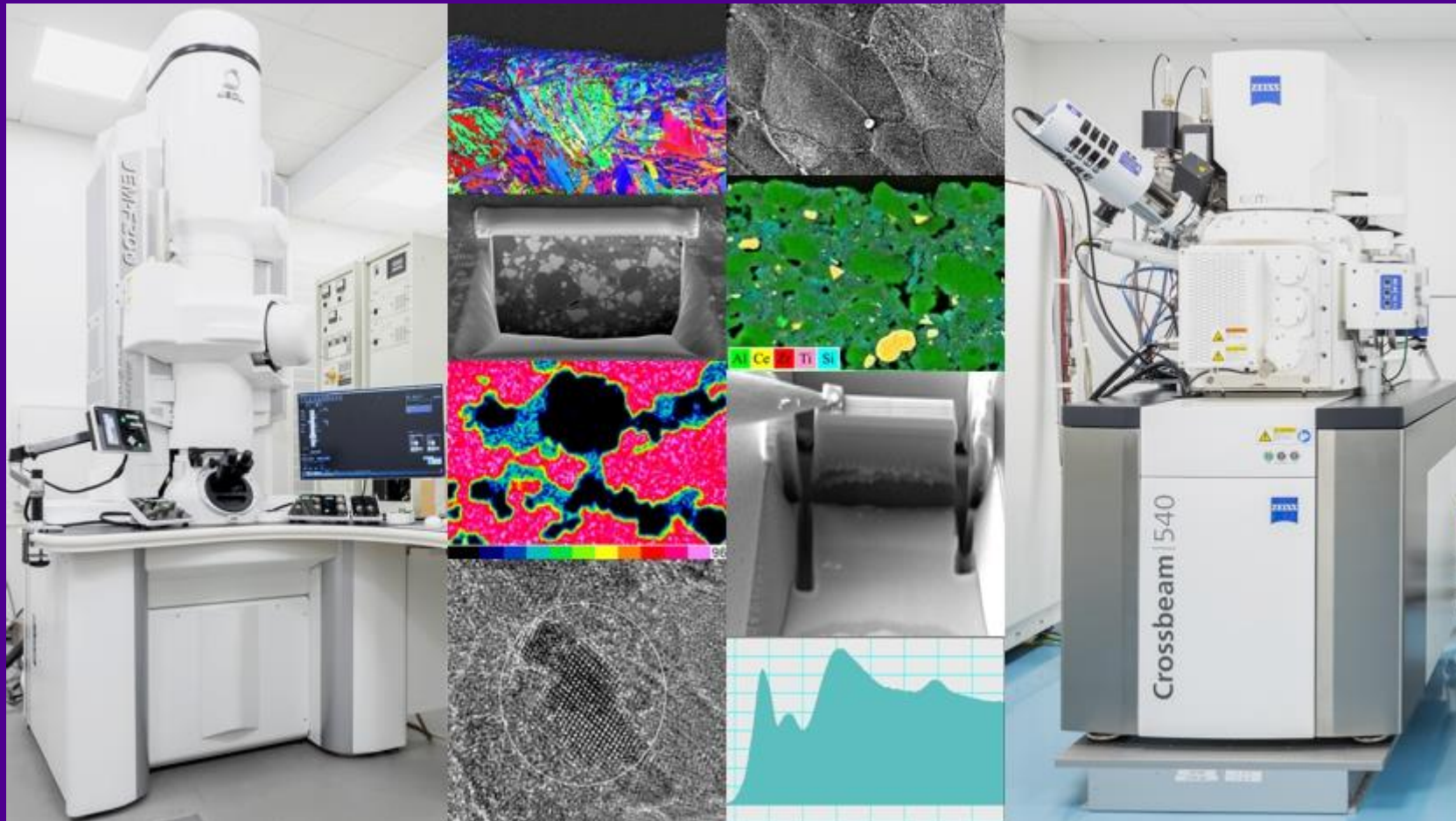


Tampere Microscopy Center

- Tampereen University, Faculty of Engineering and Natural Sciences, Hervanta campus, Sähkötaló
- <https://research.tuni.fi/microscopy/>, tmc@tuni.fi
- TMC research methods:
 - Analytical (S)TEM
 - Analytical FESEM
 - FIBSEM
 - SEM
 - Raman spectroscopy
 - Future methods μ XRF, AFM



Welcome to TMC



Program

8.30 *Registration and coffee*

9.00 **Opening of the seminar**

Professor Minnamari Vippola, Tampere University

9.15 **SEM in tribology – tips and techniques to gain more understanding**

Professor Staffan Jacobsson, Uppsala University

10.00 **In-situ SEM nanomechanical testing**

Assistant Professor Gaurav Mohanty, Tampere University

10.30 *Break*

10.45 **Microstructural features in advanced high-strength steels**

Olli Oja, SSAB Europe Oy

11.15 **Reconstruction of parent austenite from martensitic EBSD data**

Tuomo Nyysönen, Outotec Oyj

11.45 *Lunch*

12.45 **Comparison of various high-stress wear conditions and wear performance of martensitic steels**

Kati Valtonen, Tampere University

13.15 **Formation and characterization of fretting-induced cracks and degradation layers**

Janne Juoksukangas, Tampere University

13.45 **Utilization of TEM in materials science**

Mari Honkanen, Tampere University

14.15 *Coffee break*

14.45 **Utilization of Raman spectroscopy in materials science**

Turkka Salminen, Tampere University

15.15 **Materials characterization methods in tribocorrosion research**

Elina Huttunen-Saarivirta, VTT Technical Research Centre of Finland Ltd

15.45 **Wear Forum Round Table**

Assistant Professor Mikko Hokka, Tampere University: Impact, an International Multiscale Materials Testing Research Group

Kati Valtonen, Tampere University: General Wear Forum news