# Program overview

| Tuesday June 7 | | Wednesday June 8 | | | Thursday June 9 | | | Friday June 10 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Room R7 | Room R5 | | Room R7 | Room R5 | | Room R7 | Room R5 |
| | | 08:30 | Opening, Plenary session 1 | | 08:30 | Plenary session 2 | | 08:30 | Plenary session 3 | |
| | | 09:30 | Coffee | | 09:15 | Coffee | | 09:15 | Coffee | |
| **Workshops:**<br>• Hyperspy workshop<br>• 3D EM in biomedical sciences<br>• In situ TEM workshop<br>• EBSD meeting | | 10:00 | Instrumen-tation | Neuroscience | 09:45 | Nanomaterials | Ultra-microscopy | 09:45 | Data Handling and Analysis | Cellular Imaging |
| | | 12:00 | Lunch, Exhibition area | | 11:45 | Lunch, Cafeteria | | 11:45 | Lunch and poster prize award, Cafeteria | |
| | | 13:00 | Company presentations | | 12:45 | General Assembly | | 12:45 | End of program | |
| | | 14:15 | Coffee | | 13:30 | Functional Materials | Correlative Microscopy | | | |
| | | 14:45 | Structural Materials | Geology | 15:00 | Coffee | | | | |
| | | 16:45 –18:30 | Poster session | | 15:30 | Functional Materials | Correlative Microscopy | | | |
| 19:00 –22:00 | Welcome party, Registration, Popular talk* | 19:00 | Organ concert, Nidaros Cathedral | | 16:30 –18:30 | Lab visits | | | | |
| | | | | | 19:30 | Conference dinner, Banksalen | | | | |

**Tuesday 20:30 –21:00**

***Popular talk: Arne Olsen,** *University of Oslo*
The early years of electron microscopy in Norway

# Wednesday, lecture hall **R7**

**08:30** **Official opening, Randi Holmestad and Anne Borg**

**08:45** **Plenary: Peter J. Peters,** *Maastricht University*
Beauty and Benefits of cryo-EM for research on nano machines
Chair: Johannes van der Want

09:30 Coffee

## Materials Science – Instrumentation

Chair: John Walmsley and Ragnhild Sæterli

**10:00** **Invited: Alice Bastos Fanta,** *DTU-Cen, Copenhagen*
Application of Transmission Kikuchi Diffraction in SEM and some sample preparation challenges

**10:30** **Aleksander Mosberg,** *NTNU*
In-Situ Electrical Probing of Nanowires on Focused Ion Beam Patterned Substrates

**10:45** **Per Erik Vullum,** *SINTEF*
Electron Energy Loss Spectroscopy to determine electronic properties in solid materials

**11:00** **Magnus Nord,** *University of Glasgow*
Advanced imaging with pixelated STEM detectors: 3D structure

**11:15** **Daniel Phifer,** *FEI Company*
Site-specific 35-minute TEM-lamella preparation by FIB-SEM

**11:30** **Hana Tesařová,** *TESCAN ORSAY HOLDING, a.s.*
Advantages of In-situ Testing

**11:45** **Espen Bøjesen,** *Aarhus University*
When Electron Microscopy is not Enough - Unravelling the Chemistry of Nanoparticle Formation by In Situ Total X-ray Scattering

12:00 Lunch, Exhibition area

**13:00** **Company presentations**
Short presentations in the following order: Gammadata Instrument, NordicNano Solutions, Imina Technologies, CAMECA, iLab Solutions, Nikon, Oxford Instruments, Rowaco, JEOL, Spectrum Instruments, EMSIS.

# Wednesday, lecture hall **R5**

08:30 (Opening and plenary in R7)

09:30 Coffee

## Life science – Neuroscience

Chair: Menno Witter

**10:00** **Invited: Moritz Helmstaedter,** *Max Planck Institute for Brain Research, Frankfurt*
Cerebral Cortex Connectomics

**10:30** **Menno Witter,** *NTNU*
Functional Architecture of Spatial Circuits in the Brain

**11:00** **Jonathan Whitlock,** *NTNU*
Action planning and action observation in rodent parietal cortex

**11:30** **Emre Yaksi,** *NTNU*
Sensory computations in zebrafish brain

12:00 Lunch, Exhibition area

13:00 (Company presentations in R7)

# Wednesday, lecture hall **R7**

14:15 Coffee

## Materials Science – Structural Materials

Chair: Randi Holmestad and Yanjun Li

**14:45** **Invited: Stefan Zaeffrer,** *Max Planck, Düsseldorf*
Electron channelling contrast imaging (ECCI): an amazing tool for observations of crystal lattice defects in bulk samples

**15:15** **Christian Oen Paulsen,** *NTNU*
Use of Digital Image Correlation on Local Deformations in Pearlitic Steel During in situ Tensile Testing in Scanning Electron Microscope

**15:30** **Corneliu Sârbu,** *National Institute of Materials Physics, Romania*
Crystallography and Nanoscale Composition Analysis of the Surface Layer (the Case) in IN-718 Superalloy Submitted to Surface Carburization in Low-Temperature (LT) Gas Atmosphere

**15:45** **Invited: Kenji Matsuda,** *Toyama University*
The effect of additional elements on aging behavior in Al-Mg-Si/Ge alloys

**16:15** **Eva Mørtsell,** *NTNU*
HAADF-STEM Analysis of Precipitates in Al-Mg-Si Alloys

**16:30** **Emil Christiansen,** *NTNU*
Transmission Electron Microscopy of Precipitate Free Zones in Aluminium Alloys Subjected to Uniaxial Compression

**16:45 –18:30** **Poster session, exhibition area**

19:00 Organ Concert, Nidaros Cathedral

# Wednesday, lecture hall **R5**

14:15 Coffee

## Materials Science – Geology

Chair: Suzanne McEnroe and Nathan Church

**14:45** **Invited: Falko Langenhorst,** *Friedrich-Schiller-University Jena*
Quantitative TEM microanalyses of minerals: principles and applications

**15:15** **Rene de Kloe,** *EDAX*
EBSD Analysis of Natural Materials – Fossils, Meteorites, and Rocks

**15:30** **Bjørn Eske Sørensen,** *NTNU*
Advantages of Offline EBSD on Geological Samples

**15:45** **Invited: Peter Robinson,** *Geological Survey of Norway*
Exchange Bias in Minerals Related to Chemical-magnetic Structures at the Subnanometer Scale

**16:15** **Suzanne McEnroe,** *NTNU*
Quench nanostrucutres and a new view on self-reversed thermoremanent magnetization

**16:30** **Nathan Church,** *NTNU*
Electron Holography of Magnetite-Ilmenite Intergrowths Suggests Role of Interface Strain on Remanence

**16:45 –18:30** **Poster session, exhibition area**

19:00 Organ Concert, Nidaros Cathedral

# Thursday, lecture hall **R7**

**08:30** 
**Plenary: Paul Midgley,** *Cambridge University*
Crystal Cartography: Orientation and Strain Mapping using Scanning Electron Diffraction
Chair: Ton van Helvoort

09:15 Coffee

## Materials Science – Nanomaterials
Chair: Per Erik Vullum and Kay Gastinger

**09:45** 
**Invited: Stephan Hofmann,** *University of Cambridge*
In-situ Electron Microscopy for Controlling Integrated Crystal Growth of Advanced Nanomaterials

**10:15** **Jan Rusz,** *Uppsala University*
Towards measuring magnetism with atomic resolution in a transmission electron microscope

**10:30** **Antoine Dalod,** *NTNU*
In situ hydrothermal synthesis of surface functionalized titania nanoparticles

**10:45** **Reza Zamani,** *Lund University*
Interfaces in Heterostructured GaSb-InAs Nanowires

**11:00** **Per Persson,** *Linköping University*
Expanding and tailoring the two-dimensional family of MXenes

**11:15** **Robert Boyd,** *Linköping University*
A Plasma Based Method for Nanomaterial Synthesis; Highlighting Challenges of Characterising Complex Structures.

**11:30** **Gurvinder Singh,** *NTNU*
Designing multimetallic electrocatalytic nanoparticles with controlled composition and morphology

12:00 Lunch, Cafeteria

**12:45** **Scandem General Assembly**

# Thursday, lecture hall **R5**

08:30 (Plenary in R7)

09:15 Coffee

## Life Science – Ultramicroscopy
Chair: Bjørn Stokke and Magnus Lilledahl

**09:45** 
**Invited: Simon Scheuring,** *INSERM, Paris*
High-Speed Atomic Force Microscopy: The dawn of dynamic structural biochemistry

**10:15** 
**Invited: Julian Moger,** *University of Exeter*
Label-free Chemically Specific Imaging In-Planta with Stimulated Raman Scattering Microscopy

**10:45** **Kesara Anamthawat-Jónsson,** *University of Iceland*
Lymegrass Hybridization – When European Leymus arenarius Meets Its American Relative L. mollis

**11:00** **Sindre H. Bjørnøy,** *NTNU*
Raman Microspectroscopy Characterization of Calcium Phosphate Minerals Within an Alginate Hydrogel Network

**11:15** **Varpu Marjomäki,** *University of Jyväskylä*
Site-specific Probes for Enteroviruses for detailed Imaging in Light and Electron microscopy

**11:30** **Habib Baghirov,** *NTNU*
Poly(isohexyl cyanoacrylate) Nanoparticle Transport Across the Blood-Brain Barrier in a Melanoma Metastasis Model Using Focused Ultrasound

12:00 Lunch, Cafeteria

12:45 (General Assembly in R7)

# Thursday, lecture hall **R7**

## Materials Science – Functional Materials

Chair: Ton van Helvoort and Jostein Grepstad

**13:30** **Invited: Erik Folven,** *NTNU*
Probing tailored magnetic domain structures in nanomagnets using x-ray spectromicroscopy

**14:00** **Thomas Thersleff,** *Uppsala University*
Magnetic measurements in the TEM using STEM-EMCD

**14:15** **Julie Stene Nilsen,** *NTNU*
Characterization of Pd/Ge/Au contacts on GaAs Nanowires

**14:30** **Magnus Garbrecht,** *Linköping University*
HRTEM Exploration and Development of Metal/Semiconductor Superlattice Thin Films

**14:45** **Anette Eleonora Gunnæs,** *University of Oslo*
Study of $Cu_2O$/ZnO Heterojunction Interfaces at the Atomic Scale

15:00 Coffee

**15:30** **Hannah Nerl,** *Trinity College Dublin*
Exciton and Plasmon Mapping at the Nanoscale

**15:45** **Laura Bocher,** *Laboratoire de Physique des Solides, Paris*
Resolving the atomic and electronic structures of functional nanostructured oxides by advanced electron spectromicroscopy

**16:00** **Invited: Quentin Ramasse,** *SuperSTEM Laboratory*
High spatial and energy resolution STEM-EELS of energy harvesting materials

**16:30 –18:30** **Lab visits**

19:30 Conference dinner, Banksalen

# Thursday, lecture hall **R5**

## Life Science – Correlative Microscopy

Chair: Johannes van der Want

**13:30** **Invited: Andreas Brech,** *Oslo University Hospital*
Cytokinesis, endosomal traffic and autophagy visualized by Correlative Light and Electron microscopy

**14:00** **Oleg Shupliakov,** *Karolinska Institutet*
Actin-dependent mechanisms during synaptic vesicle fusion link exo- and endocytosis in synapses

**14:30** **Marianne Beckwith,** *NTNU*
Intracellular Life in Nanoscale 3D: Correlative Imaging by Light Microscopy and FIB/SEM tomography

14:50 Coffee

**15:30** **Nina Berggaard,** *NTNU*
The Development and Microcircuitry of Parvalbumin Positive Interneurons in Layer II of the Rat Medial Entorhinal Cortex

**15:50** **Invited: Jerome Swinny,** *University of Portsmouth*
Stress-induced Expression Plasticity of GABAAR subunits Within Serotonergic and Noradrenergic Brain Centers of the Mouse

**16:30 –18:30** **Lab visits**

19:30 Conference dinner, Banksalen

# Friday, lecture hall **R7**

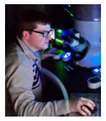
**08:30** 

**Plenary: Sara Bals,** *EMAT – University of Antwerp*
High Resolution Electron Tomography: Colouring Atoms in 3 Dimensions
Chair: Randi Holmestad

09:15 Coffee

## Materials Science – Data Handling and Analysis

Chair: Ragnhild Sæterli and John Walmsley

**09:45** 

**Invited: Lewys Jones,** *University of Oxford*
University Nano-scale strain measurements from high-precision ADF STEM

**10:15** **Sigurd Wenner,** *NTNU*
Misfit of Coherent Precipitate Phases in Al Alloys Measured by Scanning Transmission Electron Microscopy

**10:30** **Tomas Ostaševičius,** *University of Cambridge*
SAMFire – a smart adaptive fitting algorithm for multi-dimensional microscopy

**10:45** **Jakob Spiegelberg,** *Uppsala University*
Robust and Fast Analysis of Hyperspectral Data using Geometric Extraction Methods

**11:00** **Duncan Johnstone,** *University of Cambridge*
Crystallographic mapping in engineering alloys by scanning precession electron diffraction

**11:15** **Jonas Sunde,** *NTNU*
Phase Mapping of 2xxx-Series Aluminium Alloys by Scanning Precession Electron Diffraction

11:45 Lunch and poster prize award, Cafeteria

12:45 End of program

# Friday, lecture hall **R5**

08:30 (Plenary in R7)

09:15 Coffee

## Life Science – Cellular Imaging

Chair: Trude Flo

**09:45** 

**Invited: Lucy Collinson,** *Francis Crick Institute, London*
Moving towards a single microscope for 3D light microscopy and 3D electron microscopy of cells and tissues

**10:15** 

**Invited: Renaud Poincloux,** *CNRS, Tolouse*
Podosomes: mechanosensory protrusive structures involved in macrophage 3D migration

**10:45** **Alexandre Gidon,** *NTNU*
Mycobacterium avium interfering with phagosome maturation evades an antibacterial program in human primary macrophages

**11:05** **Maria Baumgarten,** *Lund University*
Electron microscopy study of collagen VI host defense peptides in vivo

**11:25** **Jopi J. W. Mikkonen,** *University of Eastern Finland*
The Lacunar-Canalicular Structure of Mandible Studied by Scanning Electron Microscopy

11:45 Lunch and poster prize award, Cafeteria

12:45 End of program

# Poster session, 8th of June 16:45

Authors should be present at their posters from 16:45 to 17:30 for odd numbered posters, and from 17:45 to 18:30 for even-numbered posters.

**1 FIB-TEM Characterization of SiGeSn Quantum Well Photodiodes**
Alessandro Benedetti, *University of Vigo, Spain*

**2 The Carbon Nanotube Loss Spectrum Investigated at High Energy Resolution in Real and Momentum Space**
Fredrik S. Hage, *SuperSTEM Laboratory*

**3 Processing AFM data of porous anodic alumina with varying degrees of structure regularity**
Ekaterina Muratova, *Saint-Petersburg Electrotechnical University*

**4 Nanoannotator – Novel Image Analysis Method for Nanoparticle Size Analysis**
Minnamari Vippola, *Tampere University of Technology*

**5 Analysis of $Ni_xSi_y$-Si Nanowires for Next Generation Electronics**
Markus Löffler, *Technische Universität Dresden*

**6 On the Inside of a Philips EM 400T Transmission Electron Microscope**
Bjørn Gunnar Soleim, *NTNU*

**7 Analysis at High Lateral Resolution of Ceramic and Refractory Materials with the CAMECA SXFIVE FE**
Ian Holton, *Acutance Scientific Ltd.*

**8 ζ-factor Tilt Dependency for Improved Quantitative Microanalysis**
Andreas Garmannslund, *NTNU*

**9 Polychromatic synchrotron radiation x-ray microscopy**
Ken Vidar Falch, *NTNU*

**10 Compound Electrostatic-magnetic SEM Enables Unprecedented Contrast Filtering at Low Voltages**
Daniel Phifer, *FEI Company*

**11 SEM and FIB trends – no easy systems**
Stefan Rosenberg, *NordicNano Solutions AB*

**12 Effect of Sample Preparation on EBSD Quantification of Retained Austenite in Supermartensitic Stainless Steel**
Børge Sognnæs Andresen, *NTNU*

**13 EBSD Characterization of Sigma Phase in SDSS by ROI Extraction and Optimization of Hough Parameters**
Kim Ronny Elstad, *NTNU*

**14 Order in $Fe_{1-x}Zr_x$ thin amorphous films analysed by fluctuation electron microscopy**
Klaus Leifer, *Uppsala University*

**15 Eu Modification of Al-Si Alloys Studied at the Atomic Scale**
Fredrik S. Hage, *SuperSTEM Laboratory*

**16 Transmission Electron Microscopy Characterization of Hot-Pressed Silicon Carbide with Boron and Carbon Additives**
Tina Bergh, *NTNU*

**17 Crystallization "in Situ" of Amorphous Films**
Aleksander Bagmut, *Kharkiv Polytechnic Institute, Ukraine*

**18 Deposited with Laser Sputtering of Zr in Oxygen Atmosphere**
Ivan Bagmut, *Kharkiv Polytechnic Institute, Ukraine*

**19 Advanced TEM Studies of High Efficiency Quantum Dot Intermediate Band Solar Cells**
Maryam Vatanparast, *NTNU*

**20 Electron Microscopic Characterization of Thermally Sprayed $Cr_3C_2$-37WC-18NiCoCrFe Coating**
Mari Honkanen, *Tampere University of Technology*

**21 Characterization of $BaTiO_3/La_{0.7}Sr_{0.3}MnO_3/SrTiO_3(111)$ Thin Film Systems**
Theodor Secanell Holstad, *NTNU*

**22 TEM spectroscopy on high efficiency abundant earth thin film solar cells**
Thomas Thersleff, *Uppsala University*

**23 Chemical and Structural Investigation of Grain Boundaries in Y-Doped $BaZrO_3$**
Adrian Lervik, *University of Oslo*

**24 Transmission electron microscopy characterization of Fe:ZnS**
Per Erik Vullum, *SINTEF*

**25 Tracking Electronic Pathways in Energy Materials by Low Voltage Scanning Electron Microscopy**
Janet J. Bentzen, *Technical University of Denmark*

**26 Detection of oxygen sub-lattice ordering in A-site deficient perovskites through monochromated core-loss EELS mapping**
Demie M. Kepaptsoglou, *SuperSTEM Laboratory*

**27 Space charge layers in interfaces of BZY investigated by inline electron holography**
Tarjei Bondevik, *University of Oslo*

**28 Study of Ga and N implanted ZnO Alloys at the Atomic Scale**
Mohammed Sharif, *University of Oslo*

**29 Goat hairs from a Corded Ware Burial, Finland**
Krista Vajanto, *Aalto University*

**30 From Microscopy to Micromagnetic Modeling of Oxy-Exsolved Magnetite Nanoparticles from Young Icelandic Basalts**
Geertje ter Maat, *NTNU*

**31 Focused ion beam-transmission electron microscopy of extracellular stalks produced by iron-oxidizing bacteria**
Ingunn Hindenes Thorseth, *University of Bergen*

**32 Co-localized AFM – optical hyperspectral imaging of amyloid Aβ 40 maturation**
Bjørn Torger Stokke, *NTNU*

**33 Mucin MUC1 in human oral mucosal epithelium**
Arja Kullaa, *University of Eastern Finland*

**34 Microenvironment and Ultrastructure of Cervical Carcinoma Xenografts**
Catherine Sem Wegner, *The Norwegian Radium Hospital*

**35 Second Harmonic Generation Microscopy of the Immature Articular Cartilage**
Andreas Finnøy, *NTNU*

**36 Luxury of Recent Past – Ethnographic Nettle Fabrics**
Jenni Suomela, *University of Helsinki*

**37 Automated Polarization Second Harmonic Generation**
Elisabeth Romijn, *NTNU*

**38 Development of parvalbumin-related microcircuitry in layer II of rat medial entorhinal cortex**
Nina Berggaard, *NTNU*