WORKSHOP PROGRAM

MONDAY 16 April 2018

9:30 - 10:30	Opening / introduciotion	STO 2.91
	Prof.dr. Nico Sommerdijk : *TEM in Soft Materials Science*	
10:30 - 10:45	Break	
10:45 - 12:30	Lecture	STO 2.91
	Dr. Maarten Wirix: *Principles and technical applications of Cryo-TEM*	
12:30 - 13:30	Lunch	STO 2.30
13:30 - 17:00	Instruction Cryo-TEM	STW 0.13

TUESDAY 17 April 2018

9:30 - 12:30	Hands on: Cryo-TEM	STW 0.13
12:30 - 13:30	Lunch	STO 2.30
13:30 - 17:00	Hands on: Cryo-TEM	STW 0.13

WEDNESDAY 18 April 2018

9:30 - 10:30	Lecture	STO 2.91
	Dr. Heiner Friedrich: *Basics of electron tomography*	
10:30 - 10:45	Break	
10:45 - 12:30	Demonstration: Tomography	STW 0.13
12:30 - 13:30	Lunch	STO 2.30
13:30 - 17:00	Hands on: Tomography	STW 0.13
19:00	Dinner in town	

THURSDAY 19 April 2018

9:30 - 10:30	Lecture	STO 2.91
	Dr. Maarten Wirix: *Electron tomographic reconstruction (part 1)*	
10:30 - 10:45	Break	
10:45 - 12:30	Demonstration:	STO 2.17
	Dr. Heiner Friedrich: IMOD *Tutorial (part 2)*	
12:30 - 13:30	Lunch	STO 2.30
13:30 - 17:00	Hands on: Tomography	STW 0.13

FRIDAY 20 April 2018

9:30 - 10.30	Lecture	STO 2.91
	Prof. Dr. Nico Sommerdijk: *Cryo-TEM in Material Science*	
10:30 - 10:45	Break	
10:45 - 11:30	Lecture	STO 2.91
	Dr.Maarten Wirix: *Future plans for electron microscopy*	
11:45 - 12:30	Evaluation / Closing	STO 2.91
12:30 - 13:30	Lunch	STO 2.30
13:30	Departure	

ThermoFischer Scientific
Achtseweg Noord 5
5651 GG Eindhoven
The Netherlands
www.FEI.com

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Center for Multiscale Electron Microscopy
Laboratory of Materials and Interface Chemistry
Helix Building STO 2.34
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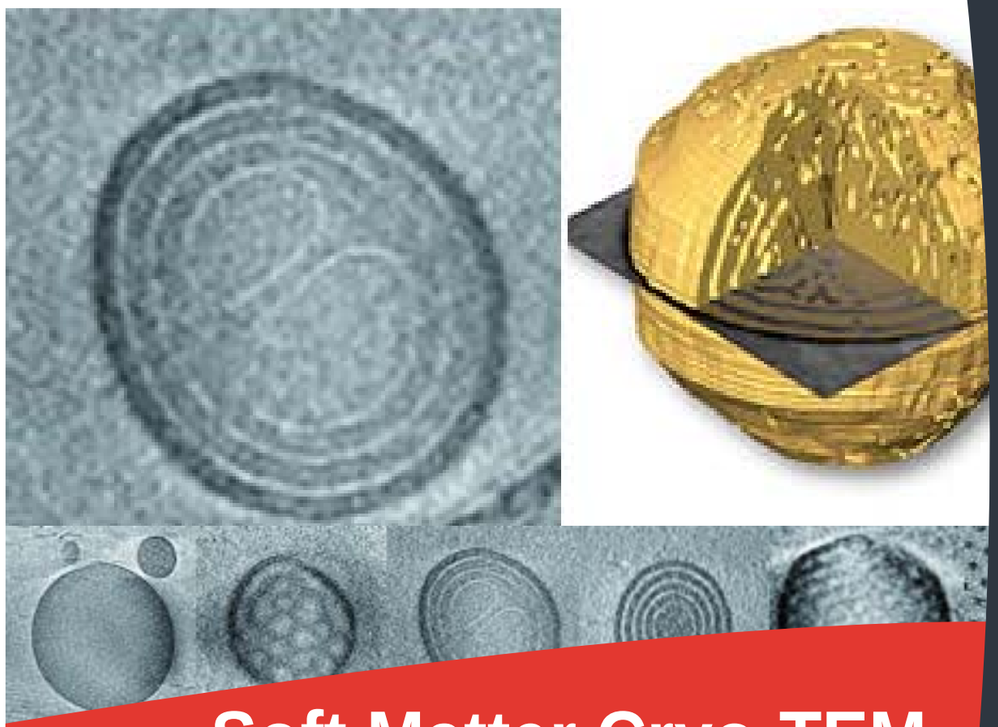
5600 MB Eindhoven / The Netherlands
www.chem.tue.nl/smg www.cryotem.com



Soft Matter Cryo-TEM

6th International Cryo-TEM Workshop
April 16th – April 20th 2018
Eindhoven, the Netherlands

Soft Matter Cryo-TEM

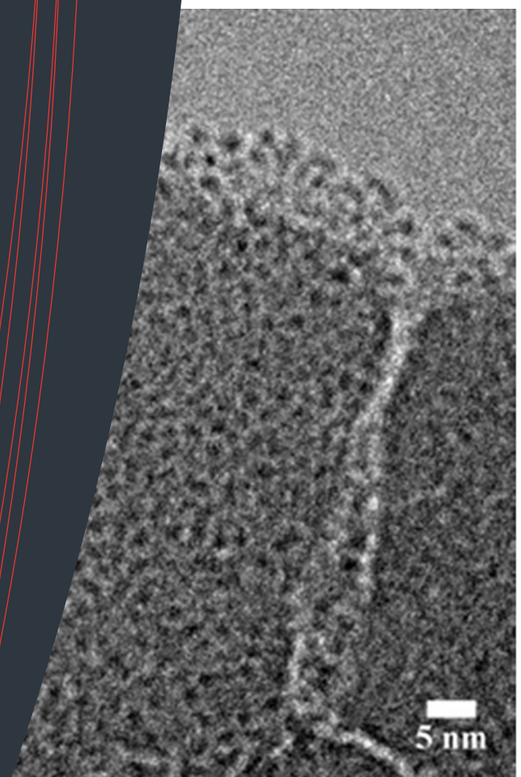
6TH INTERNATIONAL CRYO-TEM WORKSHOP 2018

Advancements in cryo-transmission electron microscopy (cryo-TEM) have made it possible to image objects from biological origin, such as viruses and proteins, now also reaching near atomic resolution. In recent years cryo-TEM is also increasingly used to investigate soft matter of synthetic origin: assemblies of organic (macro) molecules and/or inorganic nanoparticles.

Since almost a decade, Eindhoven University of Technology and Thermo Fisher Scientific have worked together at the forefront of this new field trying to advance cryo-TEM in materials science, both through developing dedicated microscopes but also through developing advanced tools and methods for sample preparation and imaging. This has allowed us to investigate a variety of soft and hybrid materials in their native hydrated state with nanometer resolution both in two and three dimensions.

Using cryo-TEM and cryo-electron tomography (3D cryo-TEM) we have revealed the structure and morphology of assemblies of surfactants, lipids and (bio)polymers in solution, as well as at interfaces. But cryo-TEM also allows us to study the interactions between organic and inorganic components, e.g. in the mineralization of collagen, generating artificial bone-like materials.

With this workshop we want to demonstrate the possibilities of cryo-TEM, and to show you how to use this powerful technique in your own research and in your own laboratory. The workshop is aimed at participants at PhD/post doc level and who are experienced in basic microscopy and who wish to extend their knowledge and practical experience in 2D and/or 3D cryo-imaging. The workshop will consist of **lectures** from experts, but also of extensive practical, hands-on **sessions** where you will be stimulated to investigate **samples from your own research**.

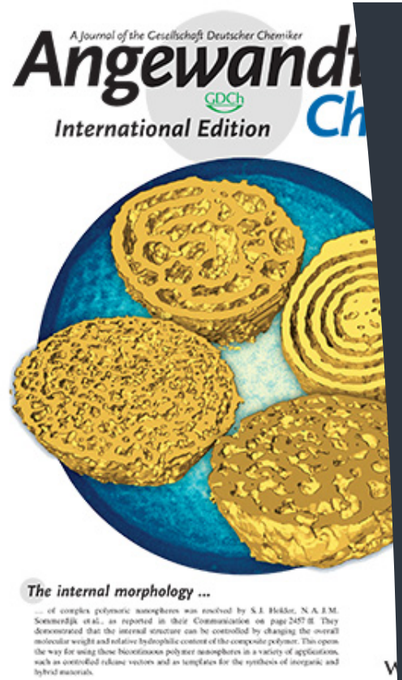


PROGRAM HIGHLIGHTS

- **TEM OF SOFT MATTER: WHY CRYO-TEM?**
- **SAMPLE PREPARATION: VITRIFICATION**
- **LOW DOSE IMAGING**
- **INTERPRETATION OF IMAGES**
- **2D VS 3D TOMOGRAPHY**
- **DATA ACQUISTION**

MICROSCOPY AND SAMPLE PREPARATION

Imaging soft matter poses a number of technical challenges related to the delicate nature of the material of interest, its low contrast in the specimens, in combination with the high vacuum and low temperature requirements for the cryo-TEM process. You will work with our microscope (TitanKrios) optimized for combined resolution and contrast as well as with our vitrification robots (Vitrobot) for efficient and reliable sample preparation.



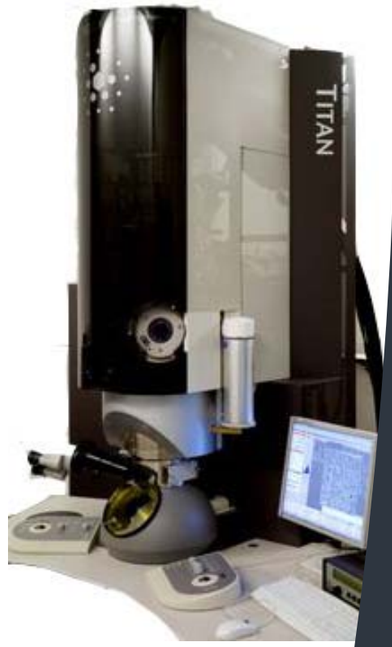
Visualizing your samples
in their native hydrated state

CRYO-TEM SOLUTIONS

Cryo-TEM will allow you to visualize solution species in their native hydrated state, so without running the risk of introducing artifacts due to staining or drying. By plunge freeze vitrification soft matter samples, are embedded in an amorphous ice layer that fixates and stabilizes them so their structure and morphology can be studied, in principle with nanometer detail. Cryo-TEM routinely uses low-dose protocols to control the exposition of the sample to the electron beam, preventing radiation damage to the generally beam sensitive soft matter.

APPLICATION MANAGEMENT

In recent years, time resolved 2D and 3D Cryo-TEM has led to new insights in a variety of soft matter systems both in aqueous media and organic solvents. You will be shown how the horizon of cryo-TEM can be widened by developing new procedures and exploring the limits of the current sample preparation techniques.



ORGANIZATION

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REGISTRATION

The registration fee is **€ 1950,-**
per person, (VAT incl.),
including full program
lunches and one dinner.
REGISTER see **www.cryotem.com**
Closure registration April 1st 2018.

WHEN

April 16th — April 20th 2018

WHERE

Eindhoven University of Technology
Chemical Engineering and Chemistry
Materials and Interface Chemistry
Helix Building STO 2.91 / STW 0.13
Het Kranenveld 14 / P.O. Box 513
5600 MB Eindhoven
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