

## Workshop title: iBiomat: Imaging biological matter, 8-10. March 2017

### Main organizers:

Rajmund Mokso (Max IV, Lund Uni.)  
Tomas Lundqvist (Max IV, Lund Uni.)  
Martin Bech (Science Faculty, Lund Uni.)  
Steven Hall (LTH)  
Kajsa Poulsson (Medical Faculty, Lund Uni)

### Local Organizers & Science chairs

Anders Larsson (Akademiska Sjukhuset)  
Per Ahlberg (Uppsala University)

### Main Objectives:

- ❖ Increase awareness among various communities about new imaging opportunities
- ❖ Identifying the scientific drivers of bio-imaging
- ❖ Receiving feedback on the technical design of BioMedMAX
- ❖ Forming an advisory body for BioMedMAX

### Description

Imaging of bio-matter in 3D at the micrometer scale does not have a long standing tradition in Sweden. As a consequence among the first 14 beamlines at Max IV there is no dedicated tomographic imaging instrument. The workshop will prepare the ground for soft condensed matter and bio-medical imaging at Max IV in particular from the perspective of the biomedical beamline, BioMedMAX but also beyond. We aim to involve several communities from the soft condensed matter, biological materials, and pre-clinical research. The outcome of the workshop should be an indication about the hot topics in Scandinavia that could be addressed at the BioMedMAX or other future Max IV beamlines and reflection on the technical design of BioMedMAX. We envisage to seek support from outstanding researchers in respective communities to help motivating others in the field to contribute to this endeavour and be part of defining the future of synchrotron bio-imaging in Scandinavia.

### Topics

The scientific focus of the workshop in smaller working groups (15-25 people):

- **Biological processes, cells and histology**
- **Bio & soft materials; colloids and foams, cellulose, lignin, polymers, textiles**
- **Cultural heritage; art and archaeology**
- **Developmental biology & Palaeontology**
- **Food & packaging**
- **MedTech: implants, dental care, Nano- particles**
- **Plants**
- **Pre-clinical studies & animal models**

Technical keynote lectures:

- Phase contrast tomographic microscopy
- Small animal imaging & therapy at a synchrotron
- X-ray fluorescence spectroscopic imaging
- Nano imaging with coherent X-rays, SAXS
- Sample preparation and contrasting
- Image analysis and visualisation

## Format

The workshop duration is 2 days (Wednesday morning -> Friday morning), integrating inspiring impulse talks followed by deep discussions in the afternoon and wrap up during the last half day. The last day is reserved for technical discussions.

	Wednesday	Thursday	Friday
8:30-10:00		Technical plenary III	Technics & Science
10:00-10:30	Arrival		Coffee
10:30-12:00	Technical plenary I	Science groups	Technics: conclusions
12:00-13:00	Lunch & posters		Departure
13:00-15:00	Science groups	Technical plenary IV	
15:00-15:30	Coffee		
15:30-17:00	Science groups	Science: Preparing report	
17:00-18:00	Technical plenary II	Science: Presenting report	
19:00-	Dinner	Closing of Science part	

Technical Plenary I: Introduction to Workshop

Life Science and Max IV

Tomographic microscopy: down to 1  $\mu\text{m}$

Coherent nano-imaging

Technical Plenary II: Small animal imaging & therapy

3 contributed

Technical Plenary III: Spectroscopy, Soft X-rays & cryo

Scattering imaging

3 contributed

Technical Plenary IV: Sample preparation & contrasting for phase imaging

Image analysis and visualisation

2 contributed

Technics & Science: Analysing the presented science cases and matching them with the existing and future imaging capabilities of Max IV

Technics conclusions: Compiling a document that will facilitate the design of experimental stations for imaging beamlines at Max IV

### Science groups:

Break-outs into thematic groups discussions with the common goal to identify key projects that may be performed at Max IV on the existing and future beamlines.

1<sup>st</sup> Day (2+2 h) - defining the scope, introductory talk (work group leaders) + down to details

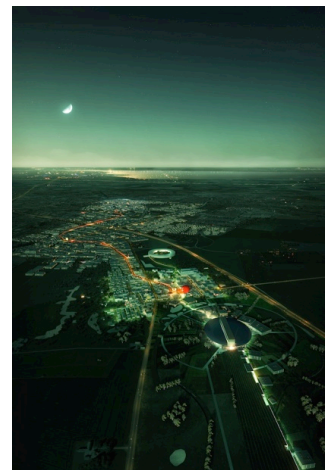
2<sup>nd</sup> Day (1.5 + 1.5 h) – finalizing details, creating report.

After 7 h effective work, each group prepares a short document summarizing the discussion in the work group and presents this on a plenary session.

These documents will be analysed by the technical experts and be a subject for discussions on Day 3.

The poster session during lunch breaks to enhance inspiration by others work.

The output of the workshop will be documented outcome of the discussions.



## Venue

Aula Gunnesalen, Uppsala