



TENTATIVE SCHEDULE for Microscopy & Imaging in Lund 2017

Lecture Room K457: Department of Physics / Synchrotron Radiation Research, Professorsgatan 1

	Date – Time	Place	Lecturer	Topic	Assignments
Lecture 1	Monday 3rd of April 10:15-12:00	Fysicum K457	A. Schaefer (Synch. Rad. Research)	<ul style="list-style-type: none"> • Introduction to the course • Introduction to Materials Science <ul style="list-style-type: none"> ○ Institutions in Lund ○ Synchrotron facilities and MAX IV 	
Lecture 2	Wednesday 5th of April 10:15-12:00	K457	A. Schaefer	<ul style="list-style-type: none"> • Presentations by students <ul style="list-style-type: none"> ○ Own Ph.D. project ○ How is microscopy involved? 	Prepare a short presentation about your research project.
Lecture 3	Monday 10th of April 10:15-12:00	K457	P. Uvdal (Chemical Physics)	<ul style="list-style-type: none"> • Infrared Microscopy <ul style="list-style-type: none"> ○ IR radiation: physical and technical principles ○ Applications in medicine, biology, materials research... ○ Using IR radiation at a synchrotron 	
Lecture 4	Wednesday 12th of April 10:00-12:00	K457	M. Moreira (Synch. Rad. Research)	<ul style="list-style-type: none"> • Device fabrication <ul style="list-style-type: none"> ○ Step by step to a microelectronic device ○ Virtual tour through Lund Nano Lab 	
Lecture 5	Wednesday 19th of April 10:00-12:00	K457	R. Wallenberg (Polymer & Materials Chemistry)	<ul style="list-style-type: none"> • Electron microscopy (TEM & SEM) <ul style="list-style-type: none"> ○ Introduction to physical and technical background ○ Modes of operation and research examples ○ nCHREM center and MicLU 	
Lecture 6	Friday 21st of April 10:00-12:00	K457 (or M-huset, to be determined at a later stage)	D. Orlov (Materials Engineering)	<ul style="list-style-type: none"> • E-SEM in materials analysis • Optical microscopy methods in materials analysis 	
Lecture 7	Monday 24th of April 13:00-15:00	K457	L. M. Svensson (Leukocyte Migration)	<ul style="list-style-type: none"> • Fluorescence based microscopy techniques <ul style="list-style-type: none"> ○ TIRF, FLIM, FRAP, PALM... 	
Lecture 8	Wednesday 26th of April 10:00-12:00	TBA	S. Hall (Solid mechanics)	<ul style="list-style-type: none"> • X-Ray tomography <ul style="list-style-type: none"> ○ 4D imaging lab (lab visit, depending on number of people) ○ Research examples • European Spallation Source (ESS) 	



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Lecture 9	Wednesday 3rd of May 10:00-12:00 (or longer)	Biologihuset	O. Gustafsson (functional Zoology)	<ul style="list-style-type: none"> • SEM, TEM Laboratory demonstration <ul style="list-style-type: none"> ○ Preparation and imaging of biological samples 	
Lecture 10	Monday 8th of May 10:00-12:00	K457	Jonas Tegenfeldt Solid state physics)	<ul style="list-style-type: none"> • Confocal microscopy • Stimulated emission depletion microscopy <ul style="list-style-type: none"> ○ Possible lab visit 	
Lecture 11	Monday 15th of May 10:00-12:00	K457	J. Zetterberg (Combustion Physics)	<ul style="list-style-type: none"> • Combustion Physics <ul style="list-style-type: none"> ○ Laser diagnostics, methodology, modes of operation ○ Planar laser induced fluorescence ○ Research examples (lab visit) 	
Lecture 12	Wednesday 17th of May 10:00-12:00	K457	J. Wallentin (Synch. Rad. Research)	<ul style="list-style-type: none"> • Nanofocused X-rays • Scanning X-ray fluorescence 	
Lecture 13	Monday 22nd of May 10:00-12:00 (evt longer!)	MAX IV	J. Schwenke MAX IV	<ul style="list-style-type: none"> • Microscopy with coherent X-rays <ul style="list-style-type: none"> ○ What are coherent x-rays?: physics and technology ○ STXM, CXI, Ptycho ○ SOFTIMAX ○ Research examples 	
Lecture 14	Wednesday 24th of MAY 10:00-12:00 (evt. Longer!)	MAX IV	A. Zakharov MAX IV	<ul style="list-style-type: none"> • Low energy electron microscopy • Photoemission electron microscopy <ul style="list-style-type: none"> ○ Physics and instrumentation ○ Research examples ○ Demonstration of the instrument at the beamline MAXPEEM 	
Lecture 15	Monday 29th of May 10:00 – 12:00 (+ lab visit)	K457	A. Schaefer G. Harlow (Synch. Rad. Research)	<ul style="list-style-type: none"> • Scanning probe microscopy <ul style="list-style-type: none"> ○ Principles of STM and AFM ○ Different measurement modes ○ Research example from model systems in heterogeneous catalysis and electrochemistry ○ Ultrahigh vacuum technology and lab visit 	
Lecture 16	Wednesday 31st of May 10:00 – 12:00	K457	A. Schaefer	<ul style="list-style-type: none"> • Final assignment • Discussions 	