

KEMM67
Scattering Methods 2021; 7.5 ECTS credits
Physical Chemistry, Lund University

WEEK	DAY	DATE	TIME & PLACE	LECTURES/EXERCISES
3	Mo	18/1	09:30 via Zoom	Roll call
	Tue	19/1	13:15 – 15:00	L0. Introduction (AS)
	We	20/1	13:15 – 15:00	L1. Introduction to scattering I (general scattering theory; scattering vector; form factor) (PS)
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	Thu	28/1	13:15 – 15:00	L2. Introduction to scattering II (general scattering theory; structure factor) (PS)
5	Tue	2/2	13:15 – 15:00	L3. Introduction to scattering III (structure factor; contrast and contrast variation) (PS)
	Thu	4/2	13:15 – 15:00	L4. Small-angle scattering I (laboratory and synchrotron x-ray sources; neutron sources; (U)SAXS and (U)SANS instrumentation) (AJ)
6	Mo	8/2	13:00 – 15:00	Lab 3. <i>Microemulsion droplets</i> . Sample preparation and phase behavior. Group I+II (MD)
	Tue	9/2	13:15 – 15:00	L5. Small-angle scattering II (how to plan an experiment; sample environment; what measurements to make; data correction to prepare the data for analysis) (AJ)
	We	10/2	13:00 – 15:00	Lab 3. <i>Microemulsion droplets</i> . Sample preparation and phase behavior. Group III+IV (MD)
	Thu	11/2	13:15 – 15:00	L6. Small-angle scattering III (methods of analysis for small angle scattering data; software tools available; introduction to SasView) (AJ)
	Fri	12/2	13:00 – 15:00	Lab 3. <i>Microemulsion droplets</i> . Sample preparation and phase behavior. Group V+VI (MD)
7	Mo	15/2	13:15 – 16:00 Ag & Hg / or via Zoom	Lab 1.A: Computer lab on small-angle scattering using SasView, calculations for fitting, fitting of simple data (AJ)
	Tue	16/2	13:15 – 16:00 Ag & Hg / or via Zoom	Lab 1.B: Computer lab on small-angle scattering using SasView, fitting of complex data (AJ)
	We	17/2	13:15 – 15:00	L7. Dynamic Light Scattering I (basic principles; speckle pattern; correlation function) (AS)
	Thu	18/2	13:15 – 15:00	L8. Dynamic Light Scattering II (particle sizing; polydispersity; multiple scattering) (AS)
	Fri	19/2	13:00 – 16:00	Lab 4. SAXS, Group I (MD)

8	Mo	22/2	13:00 – 15:00	Lab 4. SAXS, all groups; via Zoom (MD)
	Tue	23/2	13:00 – 15:00	Lab 4. SAXS, all groups; via Zoom (MD)
	We	24/2	13:15 – 15:00	L9. BioSAXS (studying protein structure with SAXS, experimental considerations, data analysis strategies) (OB)
	Thu	25/2	13:00 – 16:00	Lab 4. SAXS, Group IV (MD)
	Fri	26/2	13:00 – 16:00 13:00 – 16:00	Lab 4. SAXS, Group V (MD) Lab 5. Light Scattering, Group I (GD)
L A B W E E K	Mo	1/3	13:00 – 16:00 13:00 – 15:00	Lab 4. SAXS, Group VI (MD) Lab 5. Light Scattering, all groups; via Zoom (GD)
	Tue	2/3	13:00 – 15:00	Lab 5. Light Scattering, all groups; via Zoom (GD)
	We	3/3	13:00 – 16:00	Lab 5. Light Scattering, Group IV (GD)
	Thu	4/3	13:00 – 16:00	Lab 5. Light Scattering, Group V (GD)
	Fri	5/3	13:00 – 16:00	Lab 5. Light Scattering, Group VI (GD)
11	Thu	18/3	10:00 – 13:00	Written examination
16	We	21/4	10:00 – 13:00	Written re-examination

Course responsible: Anna Stradner

Lecturers:

Andrew Jackson (AJ) (andrew.jackson@fkem1.lu.se)
 Peter Schurtenberger (PS) (peter.schurtenberger@fkem1.lu.se)
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 Anna Stradner (AS) (anna.stradner@fkem1.lu.se)

Assistants:

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All Lectures (L0 – L9) and most of the Lab Exercises will be given via Zoom.

Lab exercises:

Computer Lab Exercises 1.A & 1.B: [Ag and Hg (Computer rooms) or on own computer, depending on number of participants]. Via Zoom

Lab 3: Surface lab is located on floor 1 at the Division of Physical Chemistry (floor 1+2). Meeting point: in front of the elevator to the Division of Physical Chemistry on floor 0.

Lab 4: SAXS lab is located on floor 0, left of the elevator to the Division of Physical Chemistry. Via Zoom

Lab 5: Light scattering lab (LSL) is located on floor 1 at the Division of Physical Chemistry (floor 1+2). Via Zoom

Update **Version 18.01.2021**