

PSI EPFL

Multidisciplinary approach to NPs characterization

Doctoral School, MSE-674

1st Edition

Casati Nicola, Lütz Bueno Viviane, Mueller Elisabeth, Testino Andrea
PSI-Villigen, 7th-9th January 2025

Tuesday 7th January 2025 (room SZ-OFLG/402)

09:00	Welcome & Introduction to the course
09:15	Section 1.1 (Testino)
10:45	Coffee Break
11:00	Section 1.2 (Testino)
12:30	Lunch together
13:30	Section 2.1 (Casati)
15:00	Coffee break
15:30	Section 2.2 (Casati)
17:00	End of first day

Wednesday 8th January 2025 (room SZ-OFLG/402)

09:00	Section 3.1 (Lütz Bueno)
10:30	Coffee Break
11:00	Section 3.1 (Lütz Bueno)
12:30	Lunch together
13:30	Section 4.1 (Müller)
15:00	Coffee break
15:30	Section 4.2 (Müller)
17:00	End of first day

Thursday 9th January 2025 (different rooms/lab)

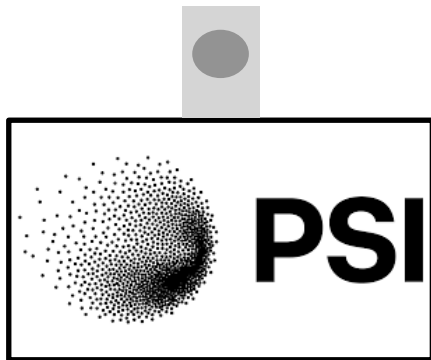
08:20	Practical section 1 – OST (Testino, group 1) – (Müller, group 2)
10:20	Break – Transfer
10:30	Practical section 4 – OST (Müller, group 1) – (Testino, group 2)
12:30	Lunch together
13:30	Practical section 2 – WEST (Casati, group 1) – (Lütz Bueno, group 2)
15:30	Break – Transfer
15:40	Practical section 3 - WEST (Lütz Bueno, group 1) – (Casati, group 2)
17:40	Break – Transfer
17:50	Exam (room SZ-OFLG/402)
18:10	Goodbye

Safety measures for the third day



During the third day you will visit chemical laboratories and facilities. For these activities you must wear safety goggles, lab coat, and gloves if chemicals are manipulated.

To access some zone, a dosimeter is needed, and additional safety measure will be applied.



Section 1 (Testino)

1. Introduction to materials characterization
2. Introduction to NPs synthesis
3. Introduction to colloidal stability
4. PSD via DLS: theory and practice

Section 2 (Casati)

1. Introduction to X-ray diffraction / scattering
2. Introduction to X-ray using Synchrotron light
3. NPs characterization via WAXS
4. Pattern refinement techniques

Section 3 (Lütz Bueno)

1. Foundations of Small-Angle Scattering
2. Practical Aspects of SAS
3. Data Analysis and Interpretation
4. Wrap-Up and Resources

Section 4 (Müller)

1. Introduction to Electron Microscopy
2. Introduction to single particle analysis
3. Chemical composition and electron diffraction
4. Single particle tomography