School of Basic Sciences
Institute of Chemistry and Chemical Engineering
Laboratory of Nanochemistry for Energy

ChE 430 – Nanomaterials for Chemical Engineering Applications

September 16th to December 20th 2024 – 3 credits

Professor: Raffaella BUONSANTI (raffaella.buonsanti@epfl.ch)

Teachers:
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Time and place: Wednesdays 13h15 to 15h in MA B1 111

14h of practical work => Lab project in Sion at the end of the semester

Recorded lectures: They are available on Media Space https://mediaspace.epfl.ch/channel/ChE-430+Nanomaterials+for+chemical+engineering+application/29677 for the students enrolled in the course

Course schedule and Information

Content:
Module 1: Techniques for the Synthesis of Nanomaterials
Module 2: Properties and Characterization of Nanoparticles
Module 3: Fundamentals of Nucleation and Growth
Module 4: Size and Shape Control
Module 5: Compositional Complexity
Module 6: Surface Chemistry and Device Implementation
Module 7: Nanomaterials in Solar Cells with brief intro to solid state physics
Module 7: Nanomaterials in Electrocatalysis (water electrolysis and CO_2 conversion)
Module 8: Nanomaterials in Photocatalysis
Module 9: Nanomaterials in Batteries (Inverted Classroom)
Module 10: Preparation for the lab project

Supporting Material:
Moodle Page: https://moodle.epfl.ch/enrol/index.php?id=15549
References and papers will be provided during the course

Evaluation:

Inverted classroom (Group, 20%)
Lab Report (Group, 20%)
Oral exam (60%)

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