Modulbezeichnung: **Advanced Electrochemistry (EnMat-1)** **5 ECTS**
(Advanced Electrochemistry)

Modulverantwortliche/r: Dirk M. Guldi
Lehrende: Christian Ehli

Startsemester: WS 2021/2022	Dauer: 1 Semester	Turnus: jährlich (WS)
Präsenzzeit: 45 Std.	Eigenstudium: 105 Std.	Sprache: Englisch

Lehrveranstaltungen:

Advanced Electrochemistry (2V/1UE):
Advanced Electrochemistry (WS 2021/2022, Vorlesung mit Übung, 3 SWS, Christian Ehli)

Inhalt:

- Comprehensive survey of the fundamentals for electrode processes (thermodynamics and kinetics)
- Introduction to electrochemical techniques (e.g. cyclic voltammetry, rotating disk voltammetry, differential pulse voltammetry, spectroelectrochemistry, electrochemical impedance spectroscopy)
- Applications of electrochemistry (e.g. corrosion prevention, batteries)
- Seminars will be based on the discussion of practical aspects and electrochemical exercises

Lernziele und Kompetenzen:

Students

- plan and perform own electrochemical experiments
- characterize electroactive materials by common electrochemical methods
- analyze, interpret and discuss electrochemical experimental results
- discuss and evaluate current electrochemical publications

Literatur:

- Allen J. Bard, Larry R. Faulkner: "Electrochemical Methods: Fundamentals and Applications", John Wiley & Sons, New York, NY
- Carl H. Hamann, Andrew Hamnett, Wolf Vielstich: "Electrochemistry", Wiley-VCH, Weinheim

For further literature, please see the current list on studon.

Verwendbarkeit des Moduls / Einpassung in den Musterstudienplan:

Das Modul ist im Kontext der folgenden Studienfächer/Vertiefungsrichtungen verwendbar:

[1] **Molecular Science (Master of Science): ab 1. Semester**
(Po-Vers. 2020w | NatFak | Molecular Science (Master of Science) | Compulsory elective module | Advances in Energy Materials | Advanced Electrochemistry)

[2] **Molecular Science (Master of Science): ab 1. Semester**
(Po-Vers. 2020w | NatFak | Molecular Science (Master of Science) | Elective modules | Advanced Electrochemistry)

Dieses Modul ist daneben auch in den Studienfächern "Chemistry (Master of Science)" verwendbar.

Studien-/Prüfungsleistungen:

Advanced Electrochemistry (Prüfungsnummer: 65421)
Prüfungsleistung, Klausur, Dauer (in Minuten): 60
Anteil an der Berechnung der Modulnote: 100%
weitere Erläuterungen:
W60(PL): written examination (60 min)
Prüfungssprache: Englisch

Erstablegung: WS 2021/2022, 1. Wdh.: WS 2021/2022
1. Prüfer: Dirk M. Guldi

Organisatorisches:

Please note:

- "Advanced Electrochemistry" will be taught only in winter term!

- Students have to register for the module on (check registration periods)!

Bemerkungen:

- Within the Compulsory Elective Module "Advances in Energy Materials" in M.Sc. Chemistry or M.Sc. Molecular Science (20 ECTS)!
- as part of the Elective Module in M.Sc. Chemistry or M.Sc. Molecular Science (5 ECTS, not graded)