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

Modulverantwortliche/r: Dirk Guldi

Lehrende: Christian Ehli

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Startsemester: WS 2020/2021

Dauer: 1 Semester

Turnus: jährlich (WS)

Präsenzzeit: 45 Std.

Eigenstudium: 105 Std.

Sprache: Englisch

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### Lehrveranstaltungen:

#### **Advanced Electrochemistry (2V/1UE):**

Advanced Electrochemistry (WS 2020/2021, Seminar, Christian Ehli)

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### 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.

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### 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)

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### 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

Erstablingung: WS 2020/2021, 1. Wdh.: WS 2020/2021

1. Prüfer: Dirk Guldi

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### Organisatorisches:

Please note:

- "Advanced Electrochemistry" will be taught only in winter term and online (synchronous)
- 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)