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**Modulbezeichnung:** **Semiconductor Materials for Energy Applications (EnMat-3)**    **5 ECTS**  
 (Semiconductor Materials for Energy Applications)

Modulverantwortliche/r: Dirk Guldi

Lehrende: Julien Bachmann, u. Mitarbeiter

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Startsemester: SS 2021

Dauer: 1 Semester

Turnus: jährlich (SS)

Präsenzzeit: 45 Std.

Eigenstudium: 105 Std.

Sprache: Englisch

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**Lehrveranstaltungen:**

Semiconductor Materials for Energy Applications (SS 2021, Vorlesung mit Übung, 2 SWS, Julien Bachmann)

Semiconductor Materials for Energy Applications - Seminar (SS 2021, Seminar, 1 SWS, Julien Bachmann et al.)

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**Inhalt:**

- Fundamentals of semiconductors: Crystal structure, Electronic structure, Electrical transport, Interaction with light
- Semiconductor devices: Tunnelling, The pn junction, The transistor
- Photovoltaics: Principles, Types of solar cells
- The interface to a solution: Charged electrolytic interfaces, Electrocatalysis and photoelectrocatalysis

**Lernziele und Kompetenzen:**

The students

- are familiar with the fundamentals and modern developments in semiconductor science and applications
  - understand theoretical and practical aspects in state-of-the-art semiconductor devices
  - can present, communicate and discuss scientific results with experts in English.
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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)**

(Po-Vers. 2020w | NatFak | Molecular Science (Master of Science) | Compulsory elective module | Advances in Energy Materials | Semiconductor Materials for Energy Applications)

**[2] Molecular Science (Master of Science)**

(Po-Vers. 2020w | NatFak | Molecular Science (Master of Science) | Elective modules | Semiconductor Materials for Energy Applications)

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

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**Studien-/Prüfungsleistungen:**

Semiconductor Materials for Energy Applications (Prüfungsnummer: 65411)

Prüfungsleistung, elektronische Prüfung, Dauer (in Minuten): 60

Anteil an der Berechnung der Modulnote: 100%

weitere Erläuterungen:

W60 (PL): electronic written examination (60 minutes) according to FAU Corona Statutes!

Prüfungssprache: Englisch

Erstablingung: SS 2021, 1. Wdh.: WS 2021/2022

1. Prüfer: Julien Bachmann

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**Organisatorisches:**

Please note:

- "Semiconductor Materials for Energy Applications" will be taught only
- Students have to register for the module on StudOn (check registration periods)!
- Registration/further information via StudOn

**Bemerkungen:**

Module compatibility:

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