Modulbezeichnung: **Theory of Surface Phenomena (TheoSurf)** **5 ECTS**
(Theory of Surface Phenomena)

Modulverantwortliche/r: Bernd Meyer
Lehrende: Bernd Meyer

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

Lehrveranstaltungen:

Theory of Surface Phenomena / Theorie der Oberflächenphänomene (SS 2022, Vorlesung mit Übung, 3 SWS, Bernd Meyer)

Empfohlene Voraussetzungen:

Basic knowledge of quantum mechanics and quantum chemical calculations is strongly recommended

Inhalt:

- Brief introduction into quantum-chemical methods for surface science studies
- Introduction of basic nomenclature of how to describe the atomic and electronic structure of surfaces
- Basic concepts on how to understand the electronic properties of metal, semiconductor and insulator surfaces, such as surface states, dangling bonds, passivation, charge neutralization with respect to polar and nonpolar surfaces
- Thermodynamic analysis of the stability of surface structures; surface phase diagrams
- Methods for calculating STM and AFM data to support the analysis of experimental data from local probe measurements

Lernziele und Kompetenzen:

The students ...

- are familiar with the most common theoretical and experimental techniques for surface science studies
- have a sound knowledge in basic principles governing surface structure and reactivity
- can perform first quantum chemical calculations on their own and interprete the data

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) | Elective modules | Theory of Surface Phenomena)

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

Studien-/Prüfungsleistungen:

Theory of Surface Phenomena (Prüfungsnummer: 65571)
Prüfungsleistung, mündliche Prüfung, Dauer (in Minuten): 20
Anteil an der Berechnung der Modulnote: 100%
weitere Erläuterungen:
O20 (PL): Oral examination (20 minutes) or alternative examination according FAU Corona Statutes!
Prüfungssprache: Englisch

Erstablegung: SS 2022, 1. Wdh.: SS 2022
1. Prüfer: Bernd Meyer

Organisatorisches:

Please note:

- Lecture is taught only in summer term
- Registration for module examination (please check registration periods on meinCampus)

- Registration/Information via Studon

Bemerkungen:

Module campatibility:

- Elective module (5 ECTS, ungraded) within the M.Sc. degree programme Chemistry or M.Sc. Molecular Science (especially Molecular **NANO**science)