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| <b>Modulbezeichnung:</b> Interface phenomena (CME4)<br>(Interface phenomena)           | <b>15 ECTS</b> |
| Modulverantwortliche/r: Rainer Fink  |                |
| Lehrende: u.a., Christian Papp, Bernd Meyer, Jörg Libuda, Andreas Görling, Rainer Fink |                |

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|------------------------|------------------------|------------------------------|
| Startsemester: SS 2020 | Dauer: 2 Semester      | Turnus: halbjährlich (WS+SS) |
| Präsenzzeit: 195 Std.  | Eigenstudium: 255 Std. | Sprache: Englisch            |

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### Lehrveranstaltungen:

#### **A. Two units per 2L + 1S from the offers A1 - A4 chosen by the student:**

One of the two units can be replaced by an equivalent interdisciplinary course with the total of 5 ECTS out of the research field of „Interface-controlled processes“ in other departments:

A5: Surface Physics

A6: Physics of Nanostructures

A7: Nanoparticles and Nanostructured Thin Films

A8: Nanoscale Surface Characterization and Structures

or related courses from the „Catalysis“ or „Molecular Nanoscience“ modules.

#### **A1: Organic Thin Films**

**Please note: this lecture is no longer offered in winter term 2020/21!**

Please check with the module coordinator which lectures you can attend as a Substitute.

#### **A2: Symmetry and Group Theory**

**Please note: this lecture is no longer offered in winter term 2020/21!**

Please check with the module coordinator which lectures you can attend as a Substitute.

#### **A3: Modern Techniques in Surface Science**

Modern Techniques in Surface Science (SS 2020, Vorlesung, 2 SWS, Christian Papp et al.)

Seminar Modern Techniques in Surface Science (SS 2020, Seminar, 1 SWS, Christian Papp et al.)

#### **A4: Specialization Lecture from Theoretical Chemistry or Computational Chemistry (Quantum Chemistry I, Modelling catalytic processes, Theory of Surface Phenomena)**

**Please note: the lectures "Quantum Chemistry I" and "Theory of Surface phenomena" are no longer offered in winter term 2020/21!**

Please check with the module coordinator which lectures you can attend as a Substitute.

Modeling of Catalytic Processes (SS 2020, Vorlesung, 2 SWS, Bernd Meyer)

Modeling of Catalytic Processes (Praktikum) (SS 2020, Praktikum, 2 SWS, Bernd Meyer et al.)

#### **B. Lab Course Interface phenomena, projects in one of the IZ-ICP research groups (P, 7 SWS)**

Attendance in lab course is compulsory!

Lab Course Interface Phenomena (SS 2020, Praktikum, 7 SWS, Rainer Fink et al.)

### Inhalt:

The module focuses on physical, chemical or technological aspects of modification, manipulation and characterization of interfaces. These aspects relate to the research of ideal model systems (surfaces and adsorbates on single crystal surfaces) or real systems, in which the interface plays a crucial role for the respective properties. In all cases, the local electronic and chemical interactions at the interface affect the geometric structure (e.g. adsorption geometry) and consequently the chemical and physical properties.

### Lernziele und Kompetenzen:

Students

- deepen their knowledge in experimental methods and theoretical aspects to describe and characterize interface phenomena
- are familiar with different modern analytical techniques and can employ the in practice
- are able to perform experiments independently and to analyse the data
- are familiar with the model-type description of experimental data and vertraut mit der modellhaften Beschreibung und Modellierung experimenteller Daten
- will be able to present and discuss their results and actual topics related to interface science in front of a specialists audience.

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**Studien-/Prüfungsleistungen:**

Grenzflächenphänomene (Prüfungsnummer: 65601)

(englische Bezeichnung: Oral Examination or Examination (Klausur) on Interface Phenomena)

Prüfungsleistung, mündliche Prüfung, Dauer (in Minuten): 45

Anteil an der Berechnung der Modulnote: 100%

weitere Erläuterungen:

O45 (PL): Oral examination 45 min (O45), 2 examiners,

EX (SL), EX (SL), LAB (SL)

Prüfungssprache: Englisch

Erstabledung: WS 2020/2021, 1. Wdh.: SS 2021

1. Prüfer: Bernd Meyer

1. Prüfer: Jörg Libuda

1. Prüfer: Andreas Göring

1. Prüfer: Rainer Fink

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**Organisatorisches:**

Grading procedure: Result of the oral examination (100%)

**Bemerkungen:**

Module compatibility: M.Sc. Chemie (Mandatory elective module or Elective module) / M.Sc. Molecular Science (only as Elective module)