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**Modulbezeichnung:** Bio(in)organic chemistry (CME3) 15 ECTS  
 (Bio(in)organic chemistry)

Modulverantwortliche/r: Nicolai Burzlaff

Lehrende: Karsten Meyer, Carola Kryschi, Olaf Prante, Andriy Mokhir, Ivana Ivanovic-Burmazovic, Norbert Jux, Frank Wilhelm Heinemann, Nicolai Burzlaff

Startsemester: SS 2020

Dauer: 2 Semester

Turnus: halbjährlich (WS+SS)

Präsenzzeit: 195 Std.

Eigenstudium: 255 Std.

Sprache: Englisch

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### Lehrveranstaltungen:

#### A) Bioinorganic chemistry 1, metalloenzymes and metals in medicine (2L, 1S)

Bioinorganic Chemistry I, Metalloenzymes and Metals in Medicine (SS 2020, Vorlesung, 2 SWS, Nicolai Burzlaff)

Seminar Bioinorganic I, Bioinorganic Reaction Mechanisms (SS 2020, Seminar, 1 SWS, Nicolai Burzlaff et al.)

#### B) Advanced Bioinorganic Chemistry (2L)

choice of 1 course from

**B1:** Bioinorganic chemistry II, oxidative stress, spectroscopy and electrochemistry (2L)

**B2:** Metallic nanoparticles in medicine

**B3:** Crystal structure determination

(**B4:** Bioinorganic chemistry III, electron transfer, photochemistry, PDT, diagnostics and metal DNA interactions - **please note: this course is no longer offered in winter term 2020/21!**)

Bioanorganische Chemie II, Chemie des oxidativen Stresses, Spektroskopie und Elektrochemie an Bioanorganischen Systemen (SS 2020, Vorlesung, 2 SWS, Ivana Ivanovic-Burmazovic)

Metallic Nanoparticles in Medicine (SS 2020, Vorlesung, 2 SWS, Carola Kryschi)

Modern X-ray structure determination of single crystals/Einführung i. d. Kristallstrukturbestimmung von Molekülverbindungen (SS 2020, Vorlesung mit Übung, 2 SWS, Frank Wilhelm Heinemann et al.)

#### C) Special aspects in bioinorganic chemistry (1S)

Special aspects in bioinorganic chemistry - Seminar (SS 2020, Seminar, 1 SWS, Nicolai Burzlaff et al.)

#### D) Lab course bioinorganic chemistry (7LAB)

Attendance in lab course is compulsory!

Bioinorganic Chemistry - Lab Course (SS 2020, Praktikum, 7 SWS, Nicolai Burzlaff et al.)

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### Inhalt:

The student

- is lead to recent research goals and achievements in the field of bioinorganic chemistry.
- evaluates and assesses the basic theories, principles and concepts of bioinorganic chemistry in compliance with a research oriented master course.
- deepens his knowledge in special topics of bioinorganic chemistry that are in the research focus of the involved research groups of the department depending on its own choice.
- performs practical studies and small research projects regarding topics of the preparative, mechanistic or more biological bioinorganic chemistry in an advanced level.

### Lernziele und Kompetenzen:

The student

- can explain and apply basic theories and principles, as well as specialized and in-depth knowledge in the fields of metalloenzymes and the interaction of metals with DNA and RNA.
  - can explain, apply and reflect upon the inorganic chemistry aspects in medicinal chemistry and toxicology.
  - can explain, apply and reflect upon the theories, terminology, specialities, boundaries and different schools of bioinorganic chemistry critically and in depth.
  - can manage the preparation of bioinorganic models, their characterization as well as their application in mechanistic studies.
  - can carry out bioinorganic research projects largely independently using a wide range of bioinorganic theories and is able to reflect upon the gained results.
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### Verwendbarkeit des Moduls / Einpassung in den Musterstudienplan:

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

[1] **Chemie (Master of Science): 1-3. Semester**

(Po-Vers. 2009 | NatFak | Chemie (Master of Science) | Wahlpflichtmodul | Bioanorganische Chemie)

[2] **Chemie (Master of Science): 1-3. Semester**

(Po-Vers. 2009 | NatFak | Chemie (Master of Science) | Wahlmodul | Bioanorganische Chemie)

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### Studien-/Prüfungsleistungen:

Bioanorganische Chemie (Prüfungsnummer: 65501)

(englische Bezeichnung: Oral Examination or Examination (Klausur) on Bioinorganic Chemistry)

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

Anteil an der Berechnung der Modulnote: 100%

weitere Erläuterungen:

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

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

Prüfungssprache: Englisch

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

1. Prüfer: Nicolai Burzlaff

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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 (Elective module)