

Modulbezeichnung: Self-Assembly (Assembly) **5 ECTS**
(Self-Assembly)

Modulverantwortliche/r: Franziska Gröhn
Lehrende: Franziska Gröhn

Startsemester: WS 2021/2022 Dauer: 1 Semester Turnus: jährlich (WS)
Präsenzzeit: 45 Std. Eigenstudium: 105 Std. Sprache: Englisch

Lehrveranstaltungen:

Self-Assembly: Molecular, Particulate and Hybrid Nanostructures (WS 2021/2022, Vorlesung, 2 SWS, Franziska Gröhn)
Seminar Self-Assembly: Molecular, Particulate and Hybrid Nanostructures (WS 2021/2022, Seminar, 1 SWS, Franziska Gröhn)

Inhalt:

- Inspired by Mother Nature: Designing Structures on the Nanoscale
- Molecular Templates for Inorganic Nanostructures, Organic-Inorganic Hybrid Structures
- Self-Assembly of Amphiphilic Molecules
- Non-Covalent Interactions for Assembly and Particle Stabilization
- Characterization Tools for Nanoparticles, Polymers and Assemblies in Solution
- Dynamic Light Scattering
- The Form Factor as Key to Particle Shape: SAXS, SANS and Static Light Scattering
- Supramolecular Architectures through Combinations of Non-Covalent Interactions
- Electrostatic Self-Assembly
- Switchable Supramolecular Nanostructures: Light, pH- and Temperature Responsivity
- Molecular and Hybrid Nano-Assemblies for Catalysis, Solar Energy Conversion and Drug Delivery

Lernziele und Kompetenzen:

Students ...

- gain insight into structural design concepts on the nanoscale
- are able to evaluate the interplay of non-covalent interactions
- know how to approach the analysis of complex nanostructures in solution
- are aware of recent studies and applications of switchable and functional nano-assemblies

Literatur:

- Recent literature
- D. F. Evans, H. Wennerström: The Colloidal Domain: Where Physics, Chemistry, Biology, and Technology Meet, 2nd Edition, Wiley 1999
- O. Glatter: Scattering Methods and their Application in Colloid and Interface Science, Elsevier 2018

Verwendbarkeit des Moduls / Einpassung in den Musterstudienplan:

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

[1] Chemistry (Master of Science): ab 3. Semester

(Po-Vers. 2020w | NatFak | Chemistry (Master of Science) | Wahlmodule | Self-assembly: molecular, particulate and hybrid nanostructures)

Studien-/Prüfungsleistungen:

Self-assembly: molecular, particulate and hybrid nanostructures (Prüfungsnummer: 65651)

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!

Examination is ungraded, but must be passed!

Prüfungssprache: Englisch

Erstablesung: WS 2021/2022, 1. Wdh.: WS 2022/2023

1. Prüfer: Franziska Gröhn

Organisatorisches:

Please note:

- Module will may be taught in presence or online (synchronous)- please check information on StudOn shortly before the start of the module!
- Students have to register for the module (check registration periods)
- Information available on StudOn: Link see below!

Bemerkungen:

Module compatibility:

- as Elective Module in MSc Chemistry, 5 ECTS/not graded