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

Modulverantwortliche/r: Franziska Gröhn  
 Lehrende: Franziska Gröhn

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

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**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)

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**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

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**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)

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**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

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

1. Prüfer: Franziska Gröhn

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**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