Experimental and numerical Mineralogy

Type of Module	Module Code
Basic Module	BM-GEO-M-SM2

Identification Number	Workload	Credit Points	Term	Offered Every	Start	Duration
MN-GEO-M-SM2	270 h	9 CP	1. – 3. Semester	SuSe	Summer Term Only	1 Semester

1	Course Types	Contact Time	Private Study	Planned Group Size
	a) Spectroscopic methods (Lecture and Exercise)	45 h	90 h	
	b) Current topics in experimental and numerical mineralogy (Lecture and Exercise)	45 h	90 h	

2 Aims of the module and acquired skills

The aim of the module is to introduce students to modern spectroscopic methods for the characterization of geological materials as well as to other experimental and simulation approaches in (geo)materials research.

Competencies:

Ability to investigate complex geological materials and processes using simplified experimental and numerical models, knowledge and practical experience in modern spectroscopic, experimental and numerical methods.

3 Contents of the module

Spectroscopic methods:
In this course modern characterization methods of (geo)materials research are presented and and their application will be illustrated by examples. This includes e.g. Raman and infrared (IR) spectroscopy, nuclear magnetic resonance spectroscopy (NMR), X-ray absorption spectroscopy (EXAFS, XANES), and Mößbauer spectroscopy. In the exercise the taught material is deepened by means of exercises and practical laboratory work.

Current topics in experimental and numerical mineralogy:
In this course, current experimental and numerical methods of mineralogical mineralogical research are discussed and deepened in practical exercises. This includes e.g. high-pressure, high-temperature experiments to understand the processes of the deep Earth or molecular numerical simulations of geological materials and processes.

4 Teaching Methods

Lecturer presentation, guided hands-on lab work, seminar lecture, practice exercises.

5 Prerequisites (for the Module)

Formal: None

6 Type of Examination

Term paper on "Spectroscopic Methods" (50%) and talk (30 min + 15 min discussion) on "Current topics in experimental and numerical mineralogy" (50%)

7 Credits Awarded

Passed Term paper and talk

8	**Compatibility with other Curricula** None
9	**Proportion of Final Grade** 9/114
10	**Module Coordinator** Prof. Dr. Sandro Jahn
11	**Further Information**