Module: Supramolecular Chemistry	
University/department/institute: Freie Universität Berlin/Department of Biology, Chemistry and Pharmacy/Institute of Chemistry and Biochemistry	
Responsible for the module: module lecturers	
Admission requirements: none	
Qualification aims: The students know the fundamental concepts of supramolecular chemistry and typical host molecules and have a detailed understanding of non-covalent interactions between molecules. They can apply the concepts of supramolecular synthesis to unknown complexes and find ways to produce them. They are familiar with methods of analysing non-covalent interactions and structural characterization of supramolecular complexes and know the importance of supramolecular chemistry for functional molecules, in materials and in living systems. In the accompanying seminar, students research controversial cases in current research, present them and discuss them critically within the group.	
Content: Non-covalent interactions (e.g. H-bridges, electrostatic interactions with hydrophobic effects); typical host molecules (e.g. calixarenes, resorcinarenes, crown ethers, cucurbituril, cyclodextrins); concepts of supramolecular synthesis (e.g. templates, self-assembly, self-sorting, allosteric regulation, multivalent and cooperative binding); methods of characterising supramolecular complexes (e.g. NMR and UV/Vis titrations, calorimetric processes, mass spectrometry); functional molecules (e.g. molecular switches, shuttle-bus rotaxanes, sensors); supramolecular materials (non-covalent polymers, gelators, liquid crystals); supramolecular interactions in and between biological molecules (protein folding, ion channels, photo systems, cell membranes)	

Teaching and learning units	**Attendance** (Semester hours per week = SH)	**Forms of active participation**	**Study time** (hours)	
Lecture	2	-	Attendance L Preparation and follow-up L	30 30
Seminar	1	Lectures, working on problem sets, contributing to discussions	Attendance S Preparation and follow-up S Examination preparation, examination	15 45 30

Language of instruction	German or English	
Compulsory regular attendance	Attendance recommended	
Study time, total hours	150 hours	5 CP
Duration of module	One semester	
Module offered	Not regularly	
Application	Master's program in Chemistry	