

Module: Advanced Lab Training in Physical Chemistry			
University/Department/Institute: Freie Universität Berlin/Department of Biology, Chemistry, Pharmacy/Institute of Chemistry and Biochemistry			
Module supervisors: Lecturers of the module			
Entrance Requirements: successful completion of the module „Chemical Thermodynamics“			
Goals of Qualification: Students know the basic experimental methods for the determination of physico-chemical variables in the fields of chemical reaction kinetics, molecular spectroscopy and atom- and molecular structure. They are able to independently carry out elementary measurements for the determination of the rate constant of chemical reactions. They are able to analyze the temporal progression of complex reaction systems with numeric methods. They are capable of determining molecular constants, e.g. vibrational force constant and rotation constants, by using spectroscopic measurements. They are able to simulate molecular spectra by using known molecular constants. By working in groups on their experiments, students have learned how to work in a team and how to use their individual skills in a way profitable for the group.			
Contents: Predefined experiments in the field of reaction kinetics, atom- and molecular structure as well as molecular spectroscopy. The total amount of experiments (ca. 10) depends on their complexity. There may be also experiments linking between the different fields of physical chemistry.			
Teaching methods	Hours of attendance (Hours per week)	Forms of active participation	Workload (hours)
Lab Training	2	research on theoretical background, preparation and conduction of experiment	Presence (Lab) supervised lab training 30 self-study in lab 30 Pre-, post-preparation (Lab) 60 Exam preparation and examination 30
Language offer of lecture		German, if required by circumstances: English	
Compulsory regular attendance		yes	
Workload (total)		150 hours	5 CP
Length of module		One semester	
Examination		Practical examination (Presentation of theoretical background, experimental results and protocols)	
Lecture is offered		Every semester	
Applicability		Bachelor study program Chemistry	