

PHYSICS

CHEMISTRY
BIOLOGY

ENGINEERING



LD DIDACTIC

STUDENT EXPERIMENTS



PHYSICS, CHEMISTRY & BIOLOGY

LEYBOLD®

ADVANCED SCIENCE KITS CHEMISTRY

400
EXPERIMENTS

OVERVIEW OF THE RANGE OF TOPICS

With about 400 experiments, both basic and advanced aspects of chemistry are handled in the areas of inorganic chemistry, organic chemistry, analytical chemistry, physical chemistry, chemical processes, detergent and food chemistry.

INORGANIC CHEMISTRY

Topics	Experiments
Basic experiments/ separation experiments	
Properties of substances	3
Separation of substances	10
Water	
Water as a solvent	6
Water conditioning	5
Air, gases and their properties	
Air and combustion	3
Preparation, test and use of different gases	1
Acids and bases	
Production, test and effects of acids	4
Bases - preparation and properties	5
Salts	
Salt formation	4
Properties and use of salts	3
Metals and non-metals	
Properties and use of metals and non-metals	13

Number of Experiments **57**

ORGANIC CHEMISTRY

Topics	Experiments
Preliminary tests	
Tests for carbon	3
Test for other elements	2
Hydrocarbons	
Properties of hydrocarbons	5
Production of hydrocarbons from crude oil	8
Processing of crude oil fractions	5
Alcohols, aldehydes and ketones	
Production of alcohols	7
Properties and use of alcohols	6
Preparation and properties of aldehydes and ketones	
Carboxylic acids and esters	
Preparation of carboxylic acids	5
Properties and use of carboxylic acids	8
Production and properties of esters	5

Number of Experiments **57**

ANALYTICAL CHEMISTRY

Topics	Experiments
Preliminary tests	
Flame colouration and blowpipe test	2
Borax bead and oxidation melt	2
Test for anions and cations	11
Chromatography	
Column, paper and thin-layer chromatography	9

Number of Experiments **24**

CHEMISTRY OF SOAPS AND DETERGENTS

Topics	Experiments
Production of soaps	
Components of soaps	2
Production and processing of soaps	4
The washing and cleaning effects of soaps	
Properties of soaps	7
Factors influencing the washing process	3
Disadvantages and limits to the use of soaps	
Reactions when adding salts and acids	2
Influence of water hardness	3
Other disadvantages	2
Modern washing powders	
Modern tensides	2
Composition of modern washing powders	8
Washing agents and environment	
Environmental load due to tensides and additives	5
Number of Experiments	38

PHYSICAL CHEMISTRY

Topics	Experiments
Electrochemical reactions	14
Particle motion and energy	
Particle motion	4
Chemical reactions and energy	6
Number of Experiments	24

CHEMICAL PROCESSES

Topics	Experiments
Inorganic key chemicals	4
Building materials	
Lime	4
Cement, concrete and gypsum	6
Glass and ceramics	
Glasses	6
Loam and clay	2
Metals – ores	
Preparation of metals	3
Alloys	2
Chemistry of black and white photograph	
Basics of black and white photography	4
Production of photographic materials	4
Basics of black and white photography	2
Fertilizers	4
Number of Experiments	41

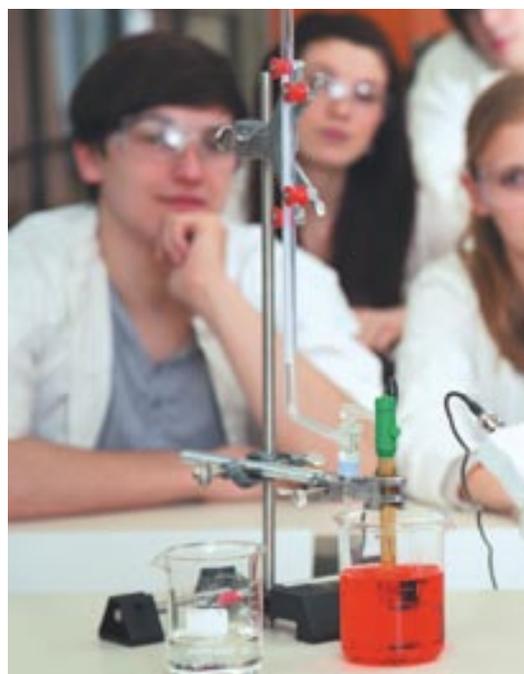
CHEMISTRY OF FOODSTUFFS

Topics	Experiments
Fats	
Fat extraction and properties of fats	10
Foodstuffs containing fats	4
Analysis of fats	8
Escort substances of fats	4
Carbohydrates	
Properties and identification	3
Polysaccharides and monosaccharides	11
Starch and cellulose	9
Pectin	3
Types of sugar and honey	4
The process of baking	2
Proteins	
Preparation and properties of proteins	4
Types of proteins	6
Additives and escort agents	
Minerals and vitamins	13
Spices and substances similar to spices	7
Stimulants	
Alcohol	6
Caffeine and theobromine	13
Changes in foodstuffs	
Aging of fats	2
Enzymatic reactions	4
Additives	
Food preservatives	6
Sweeteners and food colourings	7
Other additives	4
Water	
Properties and contents	6
Analysis of foodsuffs	
Chromatography	24
Enzymatic test pocedures	3
Number of Experiments	163



ADVANCED SCIENCE KITS CHEMISTRY

SELECT EXPERIMENT
SETUPS



- Ideal for the student's hand: great stability and functionality
- Fitting interface solutions for computer-assisted measurements (see also page 22)
- The modular setup allows for different possibilities to further studies and accounts for varying working speeds



Solid and variable stand-up assemblies with special stands and sockets enable clear experiment layouts. The basic structure is used in many experiments for inorganic, organic, physical, analytical, technical, detergent and food chemistry, so that the students can set up complex experiments without wasting time.

*Pictured experiment:
Distillation with heating mantle*



Mobile-CASSY, the universal hand-held measuring instrument, replaces traditional measuring equipment. Along with sensors from the CASSY family, Mobile-CASSY can perform varied instruments.

*Pictured experiment:
Titration and pH measurement with
Mobile-CASSY*

With basic detections, students learn to manipulate stand-mounted equipment and burners and to follow safety precautions during experiments (protective clothing, safety goggles).

*Pictured experiment:
Detection of carbon*



In the field of food chemistry, students get insight into the production and analysis of our nutrition's building blocks. Several experiments let students simulate the industrial production of foodstuffs.

*Pictured experiment:
Creation of margarine*