GENERAL CHEMISTRY
LAB COURSE
WS 2017/2018

Preliminary meeting 03.11.2017

Institute of Inorganic Chemistry - Center of Nanobionics and Photochemical Sciences (CNPS)
Some organisational stuff

**Requirement:**

- Einführung I in die Allgemeine Chemie
- Introduction I to General Chemistry

- 61 + 38 students passed the exam
- (5 + 9 enrollments from former years)
- Total number: 113 (??? Without HTL)
Maximum Number of workbenches

\[48 \times 2 + 16 \times 2\]

Practical Course Lab  TNF second floor T225

Practical Course Lab  TNF fourth floor T433
For the people who did the catch up exam (or did not inscribe yet)

The deadline for inscription will be prolonged till the end of next week. You should get your grades around Wednesday next week.

If you can’t inscribe till the end of next week, we will inscribe you into the course. (As long as you take positively part in the course you will finish it)
HTL & similar educations

- You have to write the intermediate exams
- You don’t have to do the practical work in the lab
- You have to write the final exam
- You have to do the fire extinguishing lecture

- Fill in on the list
- Copy of final certificate + protocols
Supervisors

Mariusz Wolff
Dr.

Elham Kianfar
Dr.

Petra Gründlinger
DI

Martin Ertl
Mag.

Sabrina Theis
DI

Tim Gläsel
MSc.

Kirill Faust
MSc

Katerina Kracalikova
Dr.

Stefan Humer
DI

Daniela Otte
DI

Antonia Reisecker
DI

Günther Knör
Univ.-Prof.
Dr.

Institute of Inorganic Chemistry - Center of Nanobionics and Photochemical Sciences (CNPS)
Tutors

• Leonhard Buchriegler
• Hannes Schedlberger
• Simon Wiener
• Melanie Kleindienst
• Magdalena Zachl
• Sabine Kneißl
• Andrea Schweighuber
• Simon Herber
• Paul Zebrowski
• Konstanze Kruta
• Nico Nys
• Felix Mayr
• Lukas Zehetner
• Manuel Pühringer
• Isabella Eder
• Magdalena Muhr
• Farzah Abdalla
• Birigit Götzfried
• Stephan Haudum
• Kabrelian Agop
Contact information

• Office: Kopfgebäude
  KG 502 (ME)/ KG 516 (Secretary)

• Phone: +43 732 2468 5110 or 5101
  internally just 5110 or 5101

• Mail: martin.ertl@jku.at

• Homepage: www.jku.at/anorganik
Attendance

• Our course is a so called: PRACTICAL COURSE (PR)

• University law states: a practical course is a course with compulsory attendance and immanent exam situation

• Physical presence is obligatory!
Attendance

• **Nobody** who misses the safety/fire extinguish lecture (8.11) can attend the lab course!

• If you are ill, we need to see a doctor’s note!

• Tell us before a lab day starts if you are ill

contact information: martin.ertl@jku.at
Schedule

- Preliminary Meeting
- Fire Lecture
- Place takeover
- Lab-weeks
  - 1 Lab-week Tuesday-Friday
    - 1st day Intermediate Exam 12:45
    - 4 days of labwork
      - Tuesday of the following week until 12 am: deadline protocols foyer
- Place cleaning and returning
- Final exam
Schedule – General overview

- Preliminary meeting now
- Safety/Fire lecture & lab-place takeover
  08.11.2017, 12:00, HS 10
- 3 intermediate exams (every second Tuesday 12:45, rooms: KUSSS)
- 3 weeks of lab work with 4 lab days respectively (every second week)
  (Tuesday – Friday: 12:45-17:45)
- (min.) 3 protocol-submissions (KG 5th floor, next to CC-list)
  (hand in until 12:00 of the following Tuesday after lab week)
- 1 week for work-up, cleaning and place returning
- Final exam
Fire Extinguishing-Mandatory attendance

- You have to attend the fire extinguishing lecture 8.11 at 12:00 (HS10).

Even

- If you are from former years
- If you have HTL or any other similar education
Schedule-Lab day

• 12:45 - 17:45  Labday

• 12:45 – 13:00  Meeting with your supervisor in the Lab and discussion in groups of about 12 students + supervisor about the day’s labwork

NO ONE STARTS ANY EXPERIMENTS IN ADVANCE!
TIME IS PRECIOUS – BE ON TIME

• 13:00 – 17:00  Labwork

WE FEEL FREE TO CHECK YOUR KNOWLEDGE ABOUT CURRENT EXPERIMENTS!

• 17:00 – 17:45  Cleaning and final check

SIGN-OUT WHEN YOU LEAVE!
### Schedule-Lab timetable

<table>
<thead>
<tr>
<th>Datum / date</th>
<th>Beispiele / experiments</th>
<th>Prüfungsstoff / examination matter*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fr 03.11.2017</td>
<td>Vorbesprechung / preliminary meeting (12:45, HS 2)</td>
<td>Kapitel / Chapter: 11.6-11.7, 12-15, 18</td>
</tr>
<tr>
<td>Mi / We 08.11.2017</td>
<td>Brandschutzübung / Fire extinguish training (12:00, HS 9) Laborplatzübernahme / lab-place takeover</td>
<td></td>
</tr>
<tr>
<td>Di / Tu 14.11.2017</td>
<td>Flammenfärbung / Flame test of a salt Brechungsindex / refractive index Dichte eines Festststoffes / density of a solid</td>
<td>Kapitel / Chapter: 9, 10, 11.1-11.5 + Safety</td>
</tr>
<tr>
<td>Mi / We 15.11.2017</td>
<td>Umkristallisation / Re-crystallization</td>
<td></td>
</tr>
<tr>
<td>Di / Tu 21.11.2017</td>
<td>Flammenfärbung / Flame test of a salt Brechungsindex / refractive index Dichte eines Festststoffes / density of a solid</td>
<td></td>
</tr>
<tr>
<td>Mi / We 22.11.2017</td>
<td>Umkristallisation / Re-crystallization</td>
<td></td>
</tr>
<tr>
<td>Do / Th 23.11.2017</td>
<td>Soxhlet-Extraktion / Soxhlet-extraction Iod aus KI/I₂ / Extraction of iodine from KI/I₂ Benzil aus einer CuSO₄/Benzil-Mischung / benzil from a mixture of CuSO₄/benzil</td>
<td></td>
</tr>
<tr>
<td>Fr 21.11.2017</td>
<td>Trennmethoden Adsorption / Separation technique adsorption</td>
<td></td>
</tr>
<tr>
<td>Mi / We 29.11.2017</td>
<td>pH-Wert von Lösungen / pH-values of solutions Molmasse einer schwachen Säure / molecular weight of a weak acid</td>
<td></td>
</tr>
<tr>
<td>Do / Th 30.12.2017</td>
<td>Silberversuche / Experiments with silver Mohrsche Titration / Mohr titration</td>
<td></td>
</tr>
<tr>
<td>Fr 01.12.2017</td>
<td>Phosphorsäuretitration / Titration of phosphoric acid</td>
<td></td>
</tr>
<tr>
<td>Mo 04.12.2017</td>
<td>Sublimation von Benzoësäure / Sublimation of benzoic acid Destillation eines Gemisches / Distillation of a mixture</td>
<td></td>
</tr>
<tr>
<td>Di/Tu 05.12.2017</td>
<td>pH-Wert von Lösungen / pH-values of solutions Molmasse einer schwachen Säure / molecular weight of a weak acid</td>
<td></td>
</tr>
<tr>
<td>Mi/We 06.12.2017</td>
<td>Silberversuche / Experiments with silver Mohrsche Titration / Mohr titration</td>
<td></td>
</tr>
<tr>
<td>Do/Th 07.12.2017</td>
<td>Phosphorsäuretitration / Titration of phosphoric acid</td>
<td></td>
</tr>
<tr>
<td>Di / Tu 12.12.2017</td>
<td>Komplexe 1-3 / Complexes 1-3</td>
<td>Kapitel / Chapter: 16, 17</td>
</tr>
<tr>
<td>Mi / We 13.12.2017</td>
<td>Eisenversuche / Experiments with iron</td>
<td></td>
</tr>
<tr>
<td>Fr / Fr 15.12.2017</td>
<td>Redox 4-7 (H₂O₂, Iod, Permanganat, Fe, Zn, Al, Cu)</td>
<td></td>
</tr>
<tr>
<td>Di / Tu 09.01.2018</td>
<td>Komplexe 1-3 / Complexes 1-3</td>
<td></td>
</tr>
<tr>
<td>Mi / We 10.01.2018</td>
<td>Eisenversuche / Experiments with iron</td>
<td></td>
</tr>
<tr>
<td>Do / Th 11.01.2018</td>
<td>Redox 1 + 2: Chlorbrandstellung, Nachweis elementarer Halogene / Synthesis of chlorine, detection of elemental halogens</td>
<td></td>
</tr>
<tr>
<td>Fr 12.01.2018</td>
<td>Redox 4-7 (H₂O₂, Iod, Permanganat, Fe, Zn, Al, Cu)</td>
<td></td>
</tr>
<tr>
<td>Mi / We 17.01.2018</td>
<td>Aufarbeitungstag, Platzrückgabe / workup, return of the lab-place</td>
<td></td>
</tr>
<tr>
<td>Do / Th 18.01.2018</td>
<td>Putztag / Cleaning day</td>
<td></td>
</tr>
</tbody>
</table>

**Remarks to the examination matter:**
- The chapters refer to “General Chemistry: A lab guide”.
- The practical work of all in this week made experiments
- The nomenclature primer is always examination matter.
- The periodic table is always examination matter.
- 1st – 2nd intermediate exam: main group elements
- 3rd intermediate exam: main and side group elements

**Final Exam:**

Do/Th 25.01.2018

12:00-13:30  HS 16/17
## Schedule-Lab timetable

### Turnus 1

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<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Fr 03.11.2</td>
<td>Vorbesprechung / preliminary meeting (12:45, HS 2)</td>
<td></td>
</tr>
<tr>
<td>Mi/We 08.11.2</td>
<td>Brandschutzübung / Fire extinguish training (12:00, HS 9)</td>
<td></td>
</tr>
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| Tu 14.11.2   | Flammenfärbung / Flame test of a salt Brechungsindex / refractive index Dichte eines Feststoffes / density of a solid | Kapitel / Chapter: 9, 10, 11.1-11.5 + Safety
| Mi/We 15.11.2 | Umkristallisation / Re-crystallization | |
| Do/Th 16.11.2 | Soxhlet-Extraction / Soxhlet-extraction Iod aus KI/I₂ / Extraction of iodine from KI/I₂ Benzil aus einer CuSO₄/Benzil-Mischung / benzil from a mixture of CuSO₄/benzil | |
| Fr 17.11.2   | Trennmethode Adsorption / Separation technique adsorption | |
| Di/Tu 28.11.2 | Sublimation von Benzoësäure / Sublimation of benzoic acid Destillation eines Gemisches / Distillation of a mixture | Kap. / Chap.: 11.6-11.7, 12-15, 18
| Mi/We 29.11.2 | pH-Wert von Lösungen / pH-values of solutions Molmasse einer schwachen Säure / molecular weight of a weak acid | |
| Do/Th 30.12.2 | Silberversuche / Experiments with silver Mohrsche Titration / Mohr titration | |
| Fr 01.12.2   | Phosphorsäuretitration / Titration of phosphoric acid | |
| Di/Tu 12.12.2 | Komplexe 1-3 / Complexes 1-3 | Kap. / Chap.: 16, 17
| Mi/We 13.12.2 | Eisenversuche / Experiments with iron | |
| Do/Th 14.12.2 | Redox 1 + 2: Chlordarstellung, Nachweis elementarer Halogene / Synthesis of chlorine, detection of elemental halogens | |
| Fr/Fr 15.12.2 | Redox 4-7 (H₂O₂, Iod, Permanganat, Fe, Zn, Al, Cu) | |
| Mi/We 17.01.2 | Aufarbeitungstag, Platzrückgabe / workup, return of the lab-place | |
| Do/Th 18.01.2 | Putztag / Cleaning day | |

### Turnus 2

<table>
<thead>
<tr>
<th>Datum / date</th>
<th>Beispiele / experiments</th>
<th>Prüfungsstoff / examination matter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fr 03.11.2</td>
<td>Vorbesprechung / preliminary meeting (12:45, HS 2)</td>
<td></td>
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<tr>
<td>Mi/We 08.11.2</td>
<td>Brandschutzübung / Fire extinguish training (12:00, HS 9) Laborplatzübernahme / lab-place takeover</td>
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| Tu 14.11.2   | Flammenfärbung / Flame test of a salt Brechungsindex / refractive index Dichte eines Feststoffes / density of a solid | Kapitel/Chapter: 9, 10, 11.1-11.5 + Safety
| Mi/We 22.11.2 | Umkristallisation / Re-crystallization | |
| Do/Th 23.11.2 | Soxhlet-Extraction / Soxhlet-extraction Iod aus KI/I₂ / Extraction of iodine from KI/I₂ Benzil aus einer CuSO₄/Benzil-Mischung / benzil from a mixture of CuSO₄/benzil | |
| Fr 24.11.2   | Trennmethode Adsorption / Separation technique adsorption | |
| Mi/W 06.12.2 | Silberversuche / Experiments with silver Mohrsche Titration / Mohr titration | |
| Do/Th 07.12.2 | Phosphorsäuretitration / Titration of phosphoric acid | |
| Mi/We 09.12.2 | Eisenversuche / Experiments with iron | |
| Do/Th 10.12.2 | Redox 1 + 2: Chlordarstellung, Nachweis elementarer Halogene / Synthesis of chlorine, detection of elemental halogens | |
| Fr 12.12.2   | Redox 4-7 (H₂O₂, Iod, Permanganat, Fe, Zn, Al, Cu) | |
| Mi/We 17.01.2 | Aufarbeitungstag, Platzrückgabe / workup, return of the lab-place | |
| Do/Th 18.01.2 | Putztag / Cleaning day | |
## Schedule – prior practical education (HTL/Lehre)

<table>
<thead>
<tr>
<th></th>
<th>Students with prior practical education</th>
<th>Other students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intermediate exams (no repetitions!)</td>
<td>Have to do/pass</td>
<td>Have to do/pass</td>
</tr>
<tr>
<td>Labwork</td>
<td><strong>NO</strong> Labwork</td>
<td>Have to do/pass</td>
</tr>
<tr>
<td>Final exam</td>
<td>Have to do/pass</td>
<td></td>
</tr>
<tr>
<td>Catch up exam</td>
<td>Have to do/pass</td>
<td>Have to do/pass</td>
</tr>
</tbody>
</table>
# Schedule - Exams

<table>
<thead>
<tr>
<th>Date</th>
<th>Turnus 1</th>
<th>Turnus 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.11.2017</td>
<td>HS 16 (12:45)</td>
<td>HS 16 (12:45)</td>
</tr>
<tr>
<td>28.11.2017</td>
<td>HS 15 (12:45)</td>
<td>HS 13 (12:45)</td>
</tr>
<tr>
<td>12.12.2017</td>
<td>HS 16 (12:45)</td>
<td>HS 16 (12:45)</td>
</tr>
<tr>
<td>25.01.2018</td>
<td>HS 16 (12:00)</td>
<td>HS 17 (12:00)</td>
</tr>
</tbody>
</table>

➢ Students with HTL and other similar education -> Turnus 2 (just for organisation reasons)
Optional tutorial

- Mondays before the intermediate exams
- 19:00 - 19:45, (for rooms -> KUSSS)
- Wednesday before the final exam
- 12:45-13:30, HS 10
- Possibility to ask questions concerning examination matter
Script & examination matter/Homepage

www.jku.at/anorganik

Practical Course in General Chemistry

Requirement: Introduction I to General Chemistry

Students with prior education are asked to bring relevant certificates prior to the preliminary meeting to Martin

Preliminary meeting: 03.11.2016 12:45, HS 2
Fire safety training: 08.11.2016 12:00, HS 10

Attention!

Due to the large amount of enrolled students the practical course will be held in a rotation system with prac hours from Tuesday to Friday.

Overview

Documents

Exam results

Dates and results of examinations

Lab regulations (94KB)
Lab guide (3.7 MB)
Protocol templates (882KB)
Primer (775KB)

(to go to the other language version, change language at the top right)
Script & examination matter

• Praktikumsskript zu Praktikum aus Allgemeiner Chemie
• Guide for Laboratory in General Chemistry
Script & examination matter

• Part A : General Chemistry – A Lab Guide
• Part B : Instructions of the experiments
Script & examination matter

• Teil A : Allgemeine Chemie – Praktikumsanleitungen
• Teil B : Vorschriften der Beispiele
Script & examination matter

- Primer (deutsch)
- Primer (english)
Script & examination matter

- Periodic table
SCRIPT & EXAMINATION MATTER

- Praktikumsskript zu Praktikum aus Allgemeiner Chemie
- Guide for Laboratory in General Chemistry

- Primer (Deutsch)
- Primer (English)

- Periodensystem
- Periodic table

• Supporting Information: Laboratory Regulations & Fire Issues (First Intermediate Exam)
Marking system

- Practical work (incl. Protocols) (45%)
- Intermediate exams (40%)
- Final exam (15%)
Rules for the exams

• Ballpoint pens (no red pens)

• Pencil (for drawings only)

• Ruler

• Non-programmable calculator
Exclusion criteria

• **Experimental work:**

  Insufficient practical work leads to exclusion from the laboratory course. Therefore a judging scheme exists:
  If you have to repeat a protocol you get -1
  If you have to repeat an experiment -2
  Negative behavior -x

  If the number of negative entries exceeds (-8)
you are excluded from the laboratory course.

• **DON’T EXCEED 8 NEGATIVE ENTRIES!**
Exclusion criteria

• **Exams:**

  If you fail twice in the exams or if you fail with under 20% you are excluded from the laboratory course.

• **Behaviour:**

  A major offense against the laboratory regulations leads to immediate exclusion from the laboratory course.
  (A minor offense against the regulations leads to one (-1) negative entry)
Laboratory regulations

• Download the laboratory regulations:
  On our homepage in English and German!

• Read & obey it!

• On the 8.11 you have to sign a list:
  With your signature you confirm your participation in the lab course “Laboratory in General Chemistry” and you accept the laboratory rules!
Laboratory protocols

- Protocols: Folder to collect (German or English) templates (fill in by hand)

- Notes in the lab: a small notebook (lab journal)

- No practical guide is allowed in the lab!

- How to write a protocol will be discussed during the lab course!

- **Protocol Deadline:** Tuesday (Dienstag) of the following week until 12:00 am
Safety clothing

- Lab coat
- Lab goggles
- Suitable gloves
- Long hair tied together
- Closed shoes
- Long legwear made of natural fiber
Cleanliness / tidiness

WRONG

CORRECT!

• Bottles and flasks marked with content name and place number (permanent marker)

• Remove dirty glassware that is no longer in use

• Closed chemical containers
Lab equipments

- Lab coat
- Safety goggles
- Spatula
- Peleus Ball
- Gloves
- pH indicator paper
- Tweezers
- Chemical spoon
- Cleaning equipment (paper towels, sponges, cleaning agents)
- Permanent marker
- Calculator
- Lab journal
- Folder for Protocols
Lab equipments

Lab coat (does who did not order with us – 33€)

- Berufsmode Schiefer
  Johann-Konrad Vogel Straße 6
  4020 Linz

- Hager Job Fashion
  Gernlandweg 15
  4040 Leonding
Lab equipments

- Lab coat
- Safety goggles
- Spatula
- Peleus Ball
- Gloves
- pH indicator paper
- Tweezers
- Chemical spoon
- Cleaning equipment (paper towels, sponges, cleaning agents)
- Permanent marker
- Calculator
- Lab journal
- Folder for Protocols

will be sold during lab-place takeover
Lab equipments

- Safety goggles - 0.00 € - 17.09 €
Lab equipments

- Spatula - 2.77 €
- Chemical spoon – 4.61 €
Lab equipments

- Peleus Ball – 3.92€
Lab Equipments

- Gloves - 5.94 €
Lab equipments

- pH indicator paper – 10.35 €
  (paper alone: 4,55)
Lab equipments

• Tweezers - 3.43 €
Lab equipments

- Safety goggles
- Spatula
- Peleus Ball
- Gloves
- pH indicator paper
- Tweezers
- Chemical spoon

Cost: ~ 64 €
Lab equipments

- Lab coat
- Safety goggles
- Spatula
- Peleus Ball
- Gloves
- pH indicator paper
- Tweezers
- Chemical spoon
- Cleaning equipment (paper towels, sponges, cleaning agents)
- Permanent marker
- Calculator
- Lab journal
- Folder for Protocols

You need your full equipment each lab-day starting at 14.11.2017
Emergency numbers

- Reception (internal phone call) 8231
- Fire brigade: 8122 (internal phone)
- Police: 8133 (internal phone)
- Ambulance: 8144 (internal phone)
- 112 (EU emergency call)
- My cell phone: 0650/4517133 (just in case of emergency)
Kükenfest

Next Tuesday, Mensa cellar, 18:00