



Program of the
6th International Clausthal Chemistry Workshop
(6th ICCW)

Sunday, February 16, 2020

Until 12:15 a.m.: RKS: arrival of the participants

12:30 a.m. Welcome address to the participants of the chemistry workshop, information about the 6th ICCW first meeting and small snack at the cafeteria of the Robert-Koch-School (RKS), Berliner Straße 16 (Mrs. Jutta Reusing, headmistress, Prof. Dr.-Ing Gunther Brenner, Vice President of TU Clausthal, Axel Franke, former teacher of chemistry at RKS).

1:40 p.m. for students interested: Walk to the museum of mining

In between, transport the luggage to the Academy of Sports

2:00-4:00 p.m. Sightseeing: UNESCO-World heritage Oberharzer Wasserwirtschaft (visit at the mining museums and lakes of Zellerfeld). Lecturer: Eberhard Paesler

Then move into accommodation at the Academy of Sports, Adolf-Ey-Str. 9

6:40 p.m. Walk to the Ristorante Lucania

7:00 p.m. Dinner at Ristorante Lucania, Mönchstalweg 30, with all workshop participants as well as with persons responsible and sponsors of the 6th ICCW

Monday, February 17, 2020

8:00 a.m. Breakfast, Academy of Sports

8:40 a.m. Walk to the IAAC

9:00 a.m. - 01:00 p.m. Work experience at the Institute of Inorganic und Analytical Chemistry (IAAC), Paul-Ernst-Straße 4, <https://www.iaac.tu-clausthal.de/en/> (Prof. Dr. Ursula Fittschen, Chemical Technician Petra Lassen, Dr. Christian Stoltenberg, Axel Franke)

Chemical analysis of supermarket products - make your choice out of:

- **Product group I: sugar, carbohydrates, raising agents** (oxidation of sugars, pectins in gelling agents, raising agents)
- **Product group VII: Sweets, Tea, coffee und cacao** (Indigo color in sugar, caffeine, iron in black tea)
- **Juices and tins, fruits and vegetables, soft drinks** (i.e. anthocyanine in fruits and vegetables, dextrine in beer, black color pigments in Coca Cola)
- **Product group X: over the counter medicine** (Iodine, effervescent tablets containing magnesium, medicine containing iron, corn tincture with salicylic acid)
- **Energy storage experiment** (Coffee-oxygen battery)
- **Quantitative determination of copper content in tap water using photometry**

1:15 p.m. - 1:45 p.m. Lunch together in the Mensa of the TU, Leibnizstraße 3.

2:00 p.m. - 4:30 p.m.



Lecture at the Institute of polymer Materials and plastic Engineering (PuK),

Agricolastraße 6, <https://www.puk.tu-clausthal.de/>

- “Composites and Plastic in a nutshell” by Dr. sc. nat. Leif Steuernagel

5:30 p.m. Dinner, Academy of Sports.

6:30 p.m. Departure to Goslar

7:00 p.m. to 8:45 p.m. Bowling in Goslar.

then return to the Academy of Sports

Tuesday, February 18, 2020

8:00 a.m. Breakfast, Academy of Sports

8:40 a.m. Walk to the PuK

9:00 a.m. - 1:00 p.m. Work experience at the Institute of polymer Materials and plastic Engineering (PuK), Agricolastraße 6

- fiber composites (VARI and Prepreg)

1:15 p.m. - 1:45 p.m. Lunch together in the Mensa of the TU

2:00 p.m. - 5:00 p.m. Electrochemical experiments at the Institute of Chemical Process Engineering, Leibnizstraße 17, and in the Clausthal Environmental Technology Research Center (CUTEC), Leibnizstraße 23, Prof. Dr.-Ing. Ulrich Kunz (www.icvt.tu-clausthal.de/en/institut/), Dr.-Ing. Andreas Lindermeir (www.cutec.de/de/), Jochen Brinkmann (www.we.tu-clausthal.de)

- **Presentation of research results**
- **Internship with Battery Boxes** (How Batteries Work - Model Batteries and Accumulators Construction also Performance Measurement and Performance Comparison)
- **fuel cells**

6:15 p.m. Dinner, Academy of Sports.

7:30 p.m. – 10:00 p.m. sports: soccer, volleyball, table tennis...

Wednesday, February 19, 2020

8:00 a.m. Breakfast, Academy of Sports

8:40 a.m. Walk to the IOC

9:00 a.m. - 10:45 a.m. Lecture at the Institute at the Institute of Organic Chemistry (IOC), Leibnizstraße 6, <https://www.ioc.tu-clausthal.de/en/>, Lecturer Prof. Dr. Andreas Schmidt

- Introducing of the Institute of Organic Chemistry and Safety training

11:00 a.m. - 4:00 p.m. Work experience at the IOC, Alena Storm

- first work experience of organic chemistry
- natural and synthetic medicine and its modification in the lab
- Chemistry of light: Synthesis of a photochromic switchable molecule



- natural and synthetic dyes

1:15 p.m. - 1:45 p.m. Lunch together in the Mensa of the TU

For students interested:

4:00 p.m. - 5:30 p.m.

- tour through the Institute of Organic Chemistry
- imposition to spectroscopy and analysis of structure of self-made synthesis products

6:15 p.m. Dinner at the Academy of Sports

For students interested:

7:10 p.m. Walk to the RKS

7:30 p.m. Torch walk to and into the Otilae mine as well as walk through a below ground mine, by Thomas Gundermann, RKS

Alternate (if the weather is bad): Quiz and activity evening at the Academy of Sports

Thursday, February 20, 2020

7:15 a.m. Breakfast, Academy of Sports

8:00 a.m. Bus departure at the Academy of Sports

8:30 a.m. – 10:00 a.m. ELEKTROCYCLING GmbH, Goslar,
<http://www.electrocyling.de/en/welcome>

10:00 a.m. Bus departure ELEKTROCYCLING GmbH

10:30 a.m. - 4:30 p.m. Work experience at the Institute physical Chemistry, Arnold Sommerfeld Straße 4, PD Dr. Jörg Adams.

- **Inversion of saccharose**: kinetics, determination of activation energy, polarimeter (polarization of light, optical rotation, chirality)
- **Heat of combustion of chocolate**: Reaction, combustion, formation enthalpy, thermal calorimetry
- **Global warming gases on the trail**: rotational vibration spectroscopy of carbon dioxide, methane and water

1:15 p.m. - 1:45 p.m. Lunch together in the Mensa of the TU

4:45 p.m. - 5:15 p.m. Prof. Dr.-Ing. Daniel Goldmannwww.ifa.tu-clausthal.de, Lecture at the Institute at the Institute of Organic Chemistry (IOC), Leibnizstraße 6,

"New technologies, new materials and market structures - Challenges for future recycling and solutions in the Harz recycling region"

6:00 p.m. PotLuck primary school (Grundschule Clausthal) (the participants have to prepare a typical menu from their home country with 3 courses)



Friday, February 21, 2020

7:15 a.m. Breakfast, Academy of Sports.

The group of participants is shared:

7:50 a.m. Departure of the larger group to Windaus

8:00 a.m. - 9:30 a.m. Visit at the laboratory glass apparatus maker Marcel Meißner at Windaus Labortechnik GmbH

09:30 a.m. Departure of the Windaus-Group to the Institute of Technical Chemistry (ITC)

08:25 a.m. Departure of the smaller (German-speaking) group to the IOC

8:45 a.m. – 9:45 a.m. Visit at the laboratory glass apparatus maker Roland Zain at the Organic Institute

10:00 a.m. – 1.00 p.m. Work experience at the Institute of Technical Chemistry (ITC), Arnold-Sommerfeld-Straße 4, <https://www.itc.tu-clausthal.de/en/>

- **Production and properties of synthetic and natural polymers** (Experiments on the synthesis and characterization of polymers, characterization of different milk types), Prof. Dr. Sabine Beuermann

1:15 p.m. - 1:45 p.m. Lunch together in the Mensa of the TU

2:00 p.m.- 3:00 p.m. Green Voltage Racer (Formula Student Team (Fabian Siegert), Leibnizstraße 10, Garage at the Institute of Geology, <https://gvr-clausthal.de/>)

- **Presentation, demonstration**

For students interested:

3:15 p.m. - 4:30 p.m. City tour (3:45 p.m. Clausthaler Marktkirche)

5:30 p.m. - 7:00 p.m. Chemistry Show at GCÜ of the Robert-Koch-Schule

(Presented by Axel Franke, Christiane Hunneshagen, students of the Chemistry Working Group)

afterwards

Farewell evening (finger food buffet) with all participants of the 6th ICCW as well as sponsors and organization team

Saturday, February 22, 2020

After the last program item of the 6th ICCW I ask for the **return of the evaluation questionnaire about the workshop**. Please fill in conscientiously and honestly.

Afterwards the participants receive their certificates.

Return all room keys and nameplates after breakfast at the Academy of Sports.

At 9:00 a.m. the rooms are to be left.

Departure of the participants