

# Chemistry workshop

The chemistry workshop will be organised by the faculty of sciences and material sciences of the Clausthal University of Technology (TUC) as well as the Robert-Koch-Schule (RKS). We would like to invite English speaking students (age group 17 - 18) who are interested in chemistry and open for international communication.

## Programme

### Sunday, 25th February 2018

**12:00 a.m. Welcome address to the participants of the chemistry workshop**, information about the 4th ICCW first meeting and snack at the canteen of Robert-Koch-Schule (RKS), Berliner Straße 16 (Mrs. Jutta Reusing, school principal, Prof. Dr.-Ing Gunter Brenner, Vice President of TU Clausthal, Dr. sc.nat. Leif Steuernagel, Institute of Polymer Materials and plastic Engineering of TU Clausthal, Axel Franke, Teacher of chemistry at RKS).

**1:30 p.m.** for students interested: Walk to the museum of mining

**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

**7:00 p.m. Dinner at Ristorante Lucania**, Mönchstalweg 30.

### Monday, 26. February 2018

**8:00 a.m.** Breakfast, Akademie des Sports.

**9:00 a.m. - 01:00 p.m.**

**Work experience at the Institute of Inorganic und Analytical Chemistry, IAAC**, Paul-Ernst-Straße 4.

(Prof. Dr. Ursula Fittschen, Prof. Dr. Arnold Adam, Chemical Technician Petra Lassen, IAAC)

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

- **Juices and tins, fruits and vegetables, soft drinks** (i.e. anthocyanine in fruits and vegetables, dextrine in beer, black color pigments in Coca Cola)
- **Sweets, Tea, coffee und cacao** (Indigo colour in sugar, caffeine, iron in black tea)
- **over the counter medicine** (Iodine, effervescent tablets containing magnesium, medicine containing iron )

**1:15 - 1:45 p.m.** Lunch, Mensa, **Leibnizstraße 3.**

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

Lectures at the Institute of polymer Materials and plastic Engineering, PuK, Agricolastraße 6  
**“Composites and Plastic in a nutshell”** by Dr. sc. nat. Leif Steuernagel

**5:30 p.m. Dinner, Akademie des Sports.**

**6:30 p.m. Departure to Goslar**

**7:00 p.m. to 8:30 p.m. Bowling in Goslar.**

## **Tuesday, 27th February 2018**

**8:00 a.m.** Breakfast, Akademie des Sports.

**9:00 a.m. - 5:00 p.m.**

**Work experience at the Institute on polymer Materials and plastic Engineering,**  
Agricolastraße 6

- fiber composites (VARI and Prepreg)

**1:15 p.m.** Lunch, Mensa

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

## **Wednesday, 28th February 2018**

**8:00 a.m.** Breakfast, Akademie des Sports

**9:00 a.m. - 4:00 p.m.**

**Work experience at the Institute of Organic Chemistry,** Leibnizstraße 6, lecturer Prof. Dr. Andreas Schmidt, IOC.

- Introducing of the Institute of Organic Chemistry
- Safety training
- first work experience of organic chemistry
- natural medicine and its modification in the lab
- synthetic medicine
- getting alkaloids out of plants
- Chemistry of light: Synthesis of an optical switch
- natural and synthetic dyes

**1:15 p.m.** Lunch, Mensa, Leibnizstraße 3.

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 selfmade synthesis products

**6:15 p.m.** Dinner, Akademie des Sports.

**7:30 p.m.** for students interested: **Torch walk to and into the Otilae mine as well as walk through a below ground mine**, by Thomas Gundermann, Robert-Koch-Schule

Or (if the weather is bad): Quiz and activity evening at the Akademie des Sports

## Thursday, 1st March 2018

**7:30 a.m.** Breakfast, Akademie des Sports

**8:15 a.m. - 9:45 a.m. Visit at the glass blower** H. Meißner at [Windaus Labortechnik GmbH](#) or H. Zain at Organic Institute

**10:30 a.m. - 3:30 p.m. Work experience at the Institute physical Chemistry**, Arnold Sommerfeld Straße 4, PD Dr. Jörg Adams.

You can choose 2-3 of the 5 fields before the start of ICCW:

- equilibrium voltage of different metals/metal salts-half-cells: Nernst equation, standard potential, Galvani-Voltage, electrode reactions
- decomposition voltage of the electrolysis of hydrogen chloride solution: electrolysis, polarisation, current flow in the electrolyte
- inversion of sugar cane: kinetics, calculation of activation energy, polarimeter (light polarisation, optical rotation, chirality)
- combustion heat of chocolate: reaction, combustion and formation enthalpy, heat calorimeter
- tour through the Institute of physical Chemistry (microscopy, spectroscopy, nanoparticle synthesis, quartz micro scale...)

Additional Mr. Adams will offer advising to all interested students about studying chemistry:

- Bachelor and Master of chemistry in Germany and especially at the TU Clausthal
- modular system
- differences between studying in the country of origin of the students

**1:15 p.m.** Lunch, Mensa, Leibnizstraße 3.

**4:00 - 5:30 p.m. Visit of the Clausthal high-tech company Sympatec GmbH:** Introduction of the company and history, Dr.-Ing. E.h. Stephan Röthele

- 4:00 p.m. Welcome address Mr. Hollek
- 4:05 p.m. Lecture "better particles" Mr. Hollek
- 4:30 p.m. 3 groups (FR, GB, DE)

Till 5:00 p.m. 20 min on each station: HELOS laser diffraction, QICPIC dynamic analysis of pictures, NANOPHOX photon spectroscopy

**6:00 p.m.** Dinner at the Akademie des Sports

**7:30- 10:00 p.m. sports: soccer, volleyball...**

## Friday, 2nd March 2018

**8:00 a.m.** Breakfast, Akademie des Sports.

**9:00 a.m. - 4:30 p.m.** “How Chemistry is being electric...”, Jochen Brinkmann M.A. and Dr.-Ing. Andreas Czymai, TU Clausthal, at the **Institute of Materials Science and Engineering**

- Learn about the functions of a battery, build your own model-battery and accumulator as well as measuring and comparing the power.
- Learn about two different concepts of the electric car. Students of the TU Clausthal present their Green Voltage Racer 4 (acceleration from zero to 100 km/h within 3.2 sec.) and the “electrochemical miracle” of the ChemCar.

**1:15- 2:00 p.m.** Lunch, Mensa, Leibnizstraße 3.

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

lecturers: Dr. Gerd Bouchon, Axel Franke, Sina Bachsmann, Christiane Weinhold, students

**Farewell dinner with all participants of the ICCW as well as sponsors and organising crew**

## Saturday, 3rd March 2018

After breakfast departure of the participants, rooms need to get cleaned latest at 9 a.m.

## Booking - Further Informations - Contact

<https://www.we.tu-clausthal.de/en/schuelerseminare/chemistry-workshop/booking-form/>

**Please take into consideration that there are only 20 places in the programme and that they will be distributed in the order of application.**

**The registration should be done until 15/12/2017**

Travel costs must be paid individually (please consider sponsoring). We will certainly help you with your travel arrangements.

The **proportional fee** for all the events including breakfast, lunch and accommodation is 130 €, without accommodation 50 €. Information concerning payment transfer will be provided during your online application.

**Contact:**

**Axel Franke**

Robert-Koch-Schule

Berliner Straße 16

D-38678 Clausthal-Zellerfeld

Tel. +49 5323 936224

Axel\_Franke@web.de