

Visit to METAS – the Swiss National Metrology Institute

METAS is offering a lab tour to visit its laboratory for making reference gas mixtures, in particular for fluorinated gases at pmol/mol levels.

Date: Friday 1st September 2017, after the GGMT meeting at Dübendorf, Empa

Location: METAS, Bern, Switzerland

METAS – general description

The Federal Institute of Metrology (METAS) serves as the federal centre of competence for all issues related to measurement and for measuring equipment and measuring procedures.

It is the Swiss national metrology institute. As such, its mandate is to ensure the availability in Switzerland of measurement and testing facilities with the degree of accuracy needed to meet the requirements of the economy, research and administration.

It fulfils its mandate in collaboration with third parties: In legal metrology with the verification laboratories as well as the cantons and their verification officers; in the dissemination of units with its designated institutes.

METAS stands at the cutting edge of measurement accuracy in Switzerland. It develops the national measurement base, that is to say it looks after the physical implementation, mutual comparison and thus the international recognition of measurement units. For this purpose, it operates the necessary laboratories and conducts the necessary research and development. It implements the Metrology Act; its other tasks are defined in the Federal Act on the Swiss Federal Institute of Metrology.

METAS is located in Wabern (Commune of Köniz) near Bern.

METAS – gas analysis group

METAS gas analysis group has been part of the HIGHGAS project (a European Metrology Research Project, running 2014-2017) together with Empa and other institutes. In the framework of this project and in close collaboration with the Group for Climate Gases, Empa, METAS gas analysis group has developed **a new method for making reference gas mixtures for fluorinated gases at pmol/mol levels**. This includes dynamic generation by permeation, dynamic dilution and storage in cylinders by cryo-filling. This method will be entirely presented at METAS. In addition people can visit the **laboratory for small gas flow calibration** using a volumetric system. This setup is routinely used to precisely calibrate for example mass flow controllers, in ml/min up to 30 L/min (0.2 % to 0.3 % expanded uncertainty). We will also offer to visit the **laboratory for ozone instrument calibration**. We expect the visit to last approximately 1-2 hours, depending on questions and discussions.

Practical information

Location – see also attached pdf “METAS_Practical_Info.pdf”

METAS lab is located in Bern area, i.e. approx. 1h30 min from Zürich main station using public transport.

Tentative schedule

The visit will be on Friday, 1st September, after the end of the GGMT meeting at Empa. We suggest starting lab tour at approx. 10:30, once people have arrived (i.e.: leaving Zürich main station at 9:00, arrival in Bern main station at 9:58). For people travelling by train, someone will pick up the participants at Bern main station to then continue to METAS by tram and bus. When you arrive on the platform, please go to sector C of this platform (the platform is divided in 4 sectors, A to D, indicated by big blue signs hanging from the roof).

Lunch is *a priori* not organised. There are many excellent restaurants in Bern.

Note: if not too many people sign up, i.e. around 10, we can then organise lunch in a restaurant, potentially at Bernau Bistro, near METAS:

<http://www.bernau.ch/index.php?page=529>

Expenses

Participants are expected to cover their expenses by themselves. Expected expenses:

- Return train ticket Bern-Zürich, 2nd class, without discount: 102 CHF (with Halb-Tax abo: 51 CHF)
- Tram ticket to go to Wabern: 4.40 CHF *2
- Lunch in a restaurant in Bern, approx. 20-25 CHF without drinks.

What else to do in Bern

After the visit people can for example visit the old town of Bern, a UNESCO World heritage site. In this old town can be visited the flat where Einstein lived during his stay in Bern.

People can also see the bears at Bärengraben, the rose garden at Rosengarten or enjoy the view on the city from the top of Bern Münster, the Late Gothic cathedral. If you are a good swimmer you can go for a swim in the river Aare. More infos here:

<https://www.bern.com/en/>

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