So you want to attend a COLTRIMS beamtime at the Advanced Light Source of the Lawrence Berkeley National Laboratory ?

Alright – here is a 6 step procedure that helps you to plan your stay. **Please read this regardless if you have attended previous (COLTRIMS) experiments at the ALS or LBNL.** If the links do not work directly please copy and paste them into your internet browser:

1st step:

- When should I come and what do I have to do before arriving at Berkeley ?

Think about how you would like to contribute:

- Help planning and designing (starts 3 to 4 months before the beamtime)
- Setting up and debugging (starts 3 weeks to 4 days before the beamtime and runs until 3 days after having first light)
- Help taking data (2 weeks during the beamtime) and/or help disassembling (1 to 2 days after the beamtime).
- Prepare yourself for the ALS beamtime: http://amo-csd.lbl.gov/downloads/ALS%20Beamtime%20Preparation.pdf
- In case you are a "COLTRIMS-Greenhorn" it is highly recommended to **dive into the following subjects before** you come to Berkeley:

  - Design and simulation of the spectrometer (use Excel, SIMION or MrSimulizer)
  - Detector setup, readout and optimization
  - NIM electronics (like fast amplifiers, constant fraction and logic modules)
  - Vacuum pumps (turbo, scroll, roots, welch, rotary vane, cryo, etc.) and flange norms (KF and CF)
  - COLTRIMS chamber (set-up, pumping down and venting, baking)
  - Supersonic gas jet (operating and diagnostics)
  - COBOLD: data acquisition and analysis program
  - Helmholtz coils and rainbow coils: function and operation

Please note that the hands on training here at LBNL will be very limited in this short and hectic time. However you can learn a lot if you are willing to shadow "the old goats", help, and ask questions.

Then you should find out when the (two-bunch-mode) beamtime takes place:
https://als.lbl.gov/operating-schedule/

Get in contact with your coworkers from Frankfurt, Kansas, and Alabama and check out who is going to be at Berkeley at which time. Try to come when there are no or only very few people scheduled yet and when you feel you can contribute the best. Once you have figured that out and booked your flight and arranged housing (see 2nd step) please send Thorsten (TWeber@lbl.gov) an email telling him when and for how long you will be at the ALS.

In order to get around access problems and safety issues you should avoid arriving at LBNL on a Friday, Saturday or Sunday since your access authorization has to be processed and some safety classes have to be taken (especially in case you did not take the online training in advance; see below). Thus you should arrive in-between Monday and Thursday (8:00 a.m. to 3:00 p.m.).

2nd step:

- Where should I live and how do I arrange parking at LBNL?

Check the following links for housing:
http://sfbay.craigslist.org/hhh/
http://amo-csd.lbl.gov/downloads/TEMPORARY%20LODGING%20IN%20BERKELEY.pdf

Here are some favorites:

Professor (hotel):
Onsite hotel: http://berkeleylabguesthouse.org/
Shattuck hotel: http://www.hotelshattuckplaza.com/

Everybody:
The Golden Bear Inn on San-Pablo and University in Berkeley: http://www.goldenbearinn.com/

Student (summer housing):
http://www.housing.berkeley.edu/conference/summervis_index.html
http://ihouse.berkeley.edu/
http://www.housing.berkeley.edu/housing/
http://internationaloffice.berkeley.edu/living

Check out the public transportation to/from and in Berkeley and vicinity:
http://www.actransit.org
http://www.bart.gov/stations/index.aspx

More helpful links can be found on our webpage: http://amo-csd.lbl.gov/tools.php#TO

You might have a rental car and want to arrange parking. (Note that there is no bus service on the weekends and walking up and down the hill can be quiet exhausting and time consuming – again: the hills are very steep here.) Reserving a parking spot is recommended since LBNL has only a few lots available to accommodate cars:
https://als.lbl.gov/about/contact-us/

Note that the link above **reserves** you a parking spot at or near the ALS, but you still have to ask for a parking **permission** once you are here: This means a person with a PhD degree has to ask the officer in building 65A for a temporary parking permit, while bringing a valid driver license and the license plate number.
Please email to ALSParking@lbl.gov for **reserving** a parking spot at the ALS.

Note: DRIVE SAFELY AND OBSERVE TRAFFIC REGULATIONS AT ALL TIMES !!!
UC Berkeley Police is actively enforcing traffic regulations and giving out tickets at LBNL. The fines are very steep: http://amo-csd.lbl.gov/downloads/TrafficFines_at_LBNL.pdf

There is a free shuttle bus service running from the Berkeley Campus and downtown to the laboratory. Please see http://fac.lbl.gov/SiteSvcs/indexbus.htm/ for more information on the shuttle bus. Again, note that there is no LBNL transportation operation on the weekends and holidays.

3rd step:

- What do I have to do to get into LBNL and the ALS?

A.) Outside Users attending an ALS beamtime only (registration with the ALS only):
Safety training is required. A generic so called Job Hazard Analysis (JHA) informs you about the hazards and their controls here at the lab (lab 2-102 and ALS). You are only allowed to do the work stated in the JHA – nothing beyond. This requires that you attend the online safety courses listed in the JHA prior to your arrival at the ALS. Please follow these steps:

- First time users AND returning users have to register online with the ALS via the following web link about 4 weeks in advance:
  http://alshub.als.lbl.gov
- You are asked to take the training classes ALS1001 and EHS0470 right away.
- Everybody (i.e. first time and returning users) has to send the user office an email and inform them about your coming 2 weeks to 10 days before your actual arrival: alsuser@lbl.gov. They will issue (or reactivate) your personal Employee Identification Number. This number is important to get credit for the safety courses you have to take (see below). The number is written on your LBNL badge.
- Download the generic JHA for COLTRIMS guests:
  http://amo-csd.lbl.gov/downloads/JHA_COLTRIMS_Guest.pdf

- Please print out your JHA and study it. It will inform you about the possible hazards and the working procedures as well as the required protective equipment you need to wear (safety glasses, lab coats and gloves etc. are provided). Please note: Safety Glasses and close-toed shoes are required in the labs. Do not wear flip-flops, sandals or similar. Do not bring food or drinks in the labs…
- As stated in the JHA you have to take the following safety courses: (SEC0201 and SEC0203 upon special request – only for people with an LDAP account; if you don't know what this please skip this course), BLI0919, ENG1001, EHS0103, EHS0056, EHS0170, EHS0171, EHS0278, EHS0348, EHS0260, EHS0243, ALS1001, EHS0470 (by now you should have already taken the last three classes and there is no need to take them again). These are all online courses which you can access here:
  http://training.lbl.gov/bltCourses.html
  in order to take the BLI0919 training course please go here:
  http://www.lbl.gov/Workplace/Training/TVP/index.html.
  Scroll down and find the training courses which are stated in the JHA. Click on the link for the web courses and log in using the "Non-LDAP login" and your Employee Identification Number issued by the ALS user office. Note: Some courses let you sign in at the end rather than at the beginning. Most completed training classes are valid for 2 years. Returning guests only have to retake the training classes which have expired. You can check out the status of your training profile after your LDAP account has been (re)activated. Use the "LDAP login" going here: https://wpc.lbl.gov/, launch the activity manager, and then retrieve your training profile. If you run into any problems or want to know about your current training status any time sooner please send Thorsten an email.

Note: If you don't take the training prior to your arrival you will have to take it at the first day of your stay here at LBNL, which can easily prevent you from working at that day and the day after.

In addition the following links are essential to work safe in lab 2-102 and at the ALS. Please read them:

- User Advisory at the ALS
http://www.als.lbl.gov/als/user-advis/21-personalProtection.html
http://www.als.lbl.gov/als/user-advis/index.html (ALS Safety Guidelines and FAQ's)

- Possible safety hazards in the COLTRIMS lab 2-102; read prior to your entry
http://amo-csd.lbl.gov/downloads/LabHazards102.pdf

- Possible safety hazards of the COLTRIMS Endstation setup; read prior to first use
http://amo-csd.lbl.gov/downloads/IHAD_COLTRIMS.pdf
http://amo-csd.lbl.gov/downloads/Upload%20Files.zip (upload files needed to understand the IHAD)

- Integrated Safety Management (ISM) plan; the core of the safe work practice
http://amo-csd.lbl.gov/downloads/Perform%20Integrated%20Safety%20Management%20ISM.pdf
http://www.lbl.gov/ehs/training/webdev/ISMvideo/

- Safety Watch List: Remember these basics
http://amo-csd.lbl.gov/downloads/SafetyWatchList.pdf

- In case you are still lacking the motivation for safety: read about tragic accidents and convince yourself to work safely
http://amo-csd.lbl.gov/downloads/Accidents%20at%20Research%20Labs.pdf

Please note: It is your responsibility to work safe. You have the right and the obligation to stop any unsafe work at LBNL. You should be able to reach the right person to address any problem and communicate your concerns. Before the work can proceed you have to be satisfied with the mitigations.

In case you bring a laptop computer please make sure you have installed the latest security patches before you come to LBNL. Your virus protection program should be up to date as well. Note that your computer is likely to get scanned by the LBNL Computer Protection Program. Find more information here:
https://commons.lbl.gov/display/cpp/Berkeley+Lab+Cyber+Security

Make sure your computer is able to operate with 110VAC/60Hz. Please bring a functioning and licensed electric power adapter (cable) – no self-made adapters are allowed.

B.) Affiliates of the Chemical Sciences Division (registration with CSD and the ALS):
This is for people who are official short or long term guests of the Chemical Sciences Division. These people usually stay beyond the beamtime period, need a visa or they receive some kind of financial support (stipend etc.). All other short term guests who are just coming for an ALS experiment (up to 3 to 4 weeks) should register with the ALS directly following procedure A.) above.

Write Thorsten an email and ask him to start the "Affiliate Registration Form (ARF) process". Give him the following information: Name, Email, Dates of appointment (from and to).

You will receive an email from affiliate@lbl.gov with instructions. A so called LDAP account and an email address will be issued to you. You will receive a link to fill out an online registration form (ARF). **Note:** You will need your passport number and in case you are a non-US citizen you are required to upload your CV. You can save your work and continue at a later point in time if you wish.

Certain non-US citizens will get a letter of invitation, which can also be used as a letter of support at the US embassy to retrieve a VISA (if needed). Citizen of terrorist sponsoring countries (T4) have to contact Thorsten as soon as possible to arrange for LBNL & DOE approval (this can take up to 3 months easily).

If you are an affiliate of the Chemical Sciences Division who now needs access to the ALS please follow this right now (please keep the order of the steps you take):
First register at the ALS:
https://alshub.als.lbl.gov/

You are asked to take the training classes ALS1001 and EHS0470 right away.

After this please email the users office (alsuser@lbl.gov) for getting access to the ALS floor with your badge (cut, paste, and complete the following message):

"I have registered online as a user from another division and have taken the ALS1001 and EHS0470 training courses to gain access to the accelerator floor. My name is…. and my employee ID number is… Thanks a lot for all your efforts in advance."

You will receive an email that asks you to complete the Work, Planning and Control (WPC) and take some more training. Please go to: https://wpc.lbl.gov/, launch the activity manager to the right and log in using the LDAP account or the "Employee ID" option with your Lab ID #. Select "LBNL "as your work location and "COLTRIMS - guest" as your work group. If this fails for technical reason please download the WPC activity here and study it:
http://amo-csd.lbl.gov/downloads/COLTRIMS-GUEST.pdf
In the end WPC requires that you will complete the following training classes in advance: SEC0201 (and SEC0203 upon special request via email), BLI0919, ENG1001, EHS0103, EHS0056, EHS0170, EHS0171, EHS0278, EHS0348, EHS0260, EHS0243, ALS1001, EHS0470 (by now you should have already taken the last three classes and there is no need to take them again). These are all online courses which you can access here:
http://www.lbl.gov/ehs/training/courses_online/index.shtml
in order to take the BLI0919 training course please go here:
http://www.lbl.gov/Workplace/Training/TVP/index.html.
Scroll down and find the training courses which are stated above. Click on the link for the web courses and log in using the "LDAP login" and your Employee Identification Number. Note: Some courses let you sign in at the end rather than at the beginning. Most completed training classes are valid for 2 years. Returning guests only have to retake the training classes which have expired. You can check out the status of your training profile after your LDAP account has been (re)activated. Use the "LDAP login" going here: https://wpc.lbl.gov/, launch the activity manager, and then retrieve your training profile. If you run into any problems or want to know about your current training status any time sooner please send Thorsten an email.

In addition the following links are essential to work safe in lab 2-102 and at the ALS. Please browse them:

- User Advisory at the ALS
https://als.lbl.gov/personal-protective-equipment/
https://als.lbl.gov/experiment-safety/ (ALS Safety Guidelines and FAQ's)

- Possible safety hazards in the COLTRIMS lab 2-102; read prior to your entry

http://amo-csd.lbl.gov/downloads/LabHazards102.pdf

- Possible safety hazards of the COLTRIMS Endstation setup; read prior to first use
http://amo-csd.lbl.gov/downloads/IHAD_COLTRIMS.pdf
http://amo-csd.lbl.gov/downloads/Upload%20Files.zip (upload files needed to understand the IHAD)

- Integrated Safety Management (ISM) plan; the core of the safe work practice
http://amo-csd.lbl.gov/downloads/Perform%20Integrated%20Safety%20Management%20ISM.pdf
http://www.lbl.gov/ehs/training/webdev/ISMvideo/

- Safety Watch List: Remember these basics
http://amo-csd.lbl.gov/downloads/SafetyWatchList.pdf

Please note: It is your responsibility to work safe. You have the right and the obligation to stop any unsafe work at LBNL. You should be able to reach the right person to address any problem and communicate your concerns. Before the work can proceed you have to be satisfied with the mitigations.

In case you bring a laptop computer please make sure you have installed the latest security patches before you come to LBNL. Your virus protection program should be up to date as well. Note that your computer is likely to get scanned by the LBNL Computer Protection Program. Find more information here:
https://commons.lbl.gov/display/cpp/Berkeley+Lab+Cyber+Security

Make sure your computer is able to operate with 110VAC/60Hz. Please bring a functioning and licensed electric power adapter (cable) – no self-made adapters are allowed.

4th step:

- How do I get into the lab and where do I have to go?

If you don't have a badge and come in by car you should send an email to Thorsten informing him about your coming in order to arrange for a temporary gate pass. Your arrival and departure time (as exact as possible) and the names of all passengers are needed at least 24 hours in advance.

If you take the Shuttle bus (which is free) you need a (valid) badge (see bus plan routes and schedules below). In case you don't have a badge the bus driver will kick you out at the gate. It then is a good idea to have the telephone numbers of people you want to visit on hand in order to ask for help and further assistance (see http://amo-csd.lbl.gov/downloads/telephone%20numbers.pdf; please print that out).

To get a badge people who have followed step 3.A.) have to go to the ALS user office at the ALS, building 6, second floor (take the stairs right at the entrance) and introduce yourself. You then will have to fill out forms and watch videos regarding work related safety issues. People who followed step 3.B.) need to see the badge office in 65A per invitation via email.

→ Please do not forget to bring your Passport and your I-94 or VISA in case you are non US citizen:
http://www-als.lbl.gov/index.php/user-information/user-guide/356-documents-for-foreign-nationals.html

After that (and your safety training) you finally can proceed to the beamline or building 2, first floor, lab 102. You will find maps here:

Maps: http://www.lbl.gov/Workplace/Transportation.html
http://isswprod.lbl.gov/labmap/labmap.asp
http://www.lbl.gov/Workplace/lab-site-map-flash.html
http://amo-csd.lbl.gov/downloads/LAB-UCB-map.pdf
Bus: http://fac.lbl.gov/SiteSvcs/indexbus.htm/
ALS floorplan: https://als.lbl.gov/beamlines/

5th step:

- Once I am at LBNL what is there to take care of and respect?

Once you are here you will need to attend a short briefing (on-the job-training) in order to get accustomed to the working environment and procedures here at LBNL. This briefing is done by an AMO group member and is necessary because of the high safety standards and in order to protect our equipment (it takes about 30 minutes to 1 hour).

Using the on the job training (http://amo-csd.lbl.gov/downloads/COLTRIMS_OJT.pdf) you will be introduced to:

- possible safety hazards (http://amo-csd.lbl.gov/downloads/LabHazards102.pdf)
- safety equipment and controls
- the Integrated Safety Management (ISM) plan (see your JHA)
- the setup (controllers, bypasses, gas manifold, pumps, crane, feedthroughs, phosphors…)
- warning and information signs

You will be asked to read all the information, labels and signs and respect the safety standards and the way the equipment is set up. We are always open for ideas and improvements, but we would appreciate if you put the things back the way you found them after you used them.

Please note that it is crucial that you are familiar with the concept of Integrated Safety Management (see step three and your JHA respectively). It is the fundamental tool here at LBNL to perform our work safely and we take it very seriously.

It is essential that you

- **know who is responsible for safety and a safe work environment**
- **know what kind of work you are allowed to do and what not**
- **know who to contact in case of any (safety) queries**
- **apply Integrated Safety Management at all times**
- **read the information and warning signs at the lab doors before entry**
- **read the information and warning signs on the equipment before first use**
- **are able to find the information about the required Personal Protective Equipment and wear it**
- **can stop any unsafe work at LBNL**
- **are familiar with the Emergency Response Guide**

During the set up and operation of the COLTRIMS apparatus and its related equipment please make sure you:

- transport and operate sensitive and unique (precision) equipment with care (like controllers, telescope, electronics, detectors, pumps, crane etc.)
- make use of pallet jacks transporting the forepumps; use lab jacks while mounting turbo pumps or vacuum spools
- transport the right equipment to the beamline when it is needed (there is very limited space at the beamline)
- are careful not to break the wheels and support feet of pumps and the chamber during transportation on the different kinds of flooring on the way to the ALS
- are careful not to break the hand wheel of the crane while storing it
- connect the exhausts of the forepumps the right way using the appropriate hoses (watch out for the labels)
- connect the vacuum gauges and convectrons correctly with the appropriate controllers (see labels)
- know how to operate our “ancient” ion gauge controllers (please ask for help and instructions first)
- do not block the air inlets of the Helmholtz power supply
- dismount the steel crane before we start taking data
- do not bump into the telescope or destroy any alignment (this can result in a 6 hours setback)
- do not over tighten screws on flanges or the earthquake brackets/bars
- never disconnect the toxic gas line at the manifold (instead, disconnect it at the regulator IN the gas cabinet)
- are not wearing flip-flops, Birkenstocks, sandals, slippers etc. (please note that this is a big NoNo throughout the entire LBNL)
- …

Once the experiment is running and we can work in shifts you will be asked to “babysit” the setup. This requires that you are able to:

- Take data with the (COBOLD) acquisition computer (start and stop files, switch from automatic to manual mode)
- Browse and interpret the (COBOLD) spectra
- Refill and empty the right nitrogen trap (safely)
- Change the photon energy and slit sizes (while watching rate meters) as well as the gratings of the monochromator
- Change the gas of the supersonic jet and operate the gas manifold (safely)
- Check detector and trigger rates
- Check detector, spectrometer and Helmholtz coils voltages/currents (power supplies)
- Transfer data to the data analysis computer if necessary
- …

This requires some basic (COLTRIMS) knowledge which we ask you to obtain in your home institution prior to the arrival at LBNL (see 1st step).

Here are some links to show you what is going on in the different phases of the experiment:
Preparation: http://amo-csd.lbl.gov/downloads/Checklist%20for%20Beamtime.pdf
Move to beamline 10 and setting up: http://amo-csd.lbl.gov/downloads/COLTRIMS%20Plan%20BL10.pdf
Watch a video about setting up at beamline 10: http://www.youtube.com/watch?v=IvznO0jYwRo&feature=youtu.be
Move to beamline 11 and setting up: http://amo-csd.lbl.gov/downloads/COLTRIMS%20Plan%20BL11.pdf
Preparation before and after the break: http://amo-csd.lbl.gov/downloads/COLTRIMS%20BREAK.pdf
Disassembly of the setup: http://amo-csd.lbl.gov/downloads/COLTRIMS%20BREAK.pdf

Please note that the beamtime comes with long working hours (usually from 9:00 to 23:00 in the setting up phase and 24/7 during data taking). Be ready to work late and in shifts. Your contribution is crucial. Please schedule any planned vacation accordingly (consult your coworkers if your absence during the beamtime would cause a problem). Please bring money to pay your rent. Please arrange transportation so that you are mobile here in Berkeley: Note that the restaurants and your housing are likely NOT in walking distance.

Note that the setting-up phase (~4 days) at the ALS and the first 1 to 2 days of data taking as well as the disassembling likely don't come with shifts just yet but rather long hours. There will be not guaranteed free time.

Attending an ALS beamtime is your chance to learn, gain experience, teach others, take responsibility of projects or subtask, organize and work and teams, recommend yourself for a longer stay with the AMO group at LBNL or with the other collaboration partners. Note that the "old goats' will notice quickly if you show up unprepared or if you are not willing to tackle a problem and get busy. It's important that you don't shy away from shadowing the old goats, i.e. accompany them when they get parts and equipment or help from other people; being unable to get equipment or help beyond the direct vicinity of the experiment and being glued to your laptop will not leave a good impression.

For your convenience: Ring Status Notification to the Cell Phone
You can receive text message notifications to your cell phone of the ALS ring status. Send a text message from your phone to alsringstatus@gmail.com containing the letters "als" in the body of the text. You will get a response with the current status and, if the beam is down, it will send a follow-up text as soon as the beam is back.

Please follow the ALS Protective Equipment Polices:

The ALS has a three-part approach that designates certain technical areas and/or activities for which various forms of Personal Protective Equipment are required.

Red Floor: The first technical area consists of all parts of the ALS experiment hall where the floor is painted red. This encompasses essentially all space under the dome in the facility, including the beamlines, accelerator tunnels, and pit areas. The PPE requirements for this area are closed-toe shoes and long pants or equivalent. Note that the non-painted perimeter walkway and the designated pedestrian walkway used for tours are not covered by this requirement.

Yellow Border: In addition to the above requirement, within the experiment hall, certain smaller, limited areas exist where chemical and/or biological materials are used or stored. This also includes areas where open containers of liquid nitrogen may be found. These areas are identified by floor mats with a yellow border. All individuals who enter

these areas (i.e., step on the floor mats) must wear proper eye protection (typically safety glasses) in addition to the closed-toe shoes and long pants.

Liquid Nitrogen: Finally, when pressurized liquid nitrogen cylinders are being manipulated, an environmental hazard to the eyes exists. Regardless of where this work occurs, anyone within a radius of 3 ft must wear safety glasses. This is reinforced with signage at the cylinders. Note that this environmental hazard does not exist when the cylinders are not being manipulated, and safety glasses are not required just to walk past a stored gas cylinder (such as exists at many loading docks, etc.).

6th step:

- …and after the Beamtime:

Return Employee/Guest Badges
Berkeley Lab ID badges must be returned when an employee terminates employment or a guest appointment ends. Employees must return their badge, parking permit, keys, dosimetry badges, etc., at their exit interview. Guests must submit their badges and parking permits to their supervisor or host, divisional or HR contact, the Site Access Office (Bldg. 65A) or a return box, located near the Bldg. 65 bus stop, the ALS reception area, or Bldg. 62/66. Guests who have already left the Lab can mail their badges. Failure to return badges jeopardizes future access. Call x4855 for more information.

For more helpful information please take a look on our website:

- Tools and helpful links for COLTRIMS guests http://amo-csd.lbl.gov/tools.php#TO

- AMO related and general LBNL safety links http://amo-csd.lbl.gov/safety.php

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