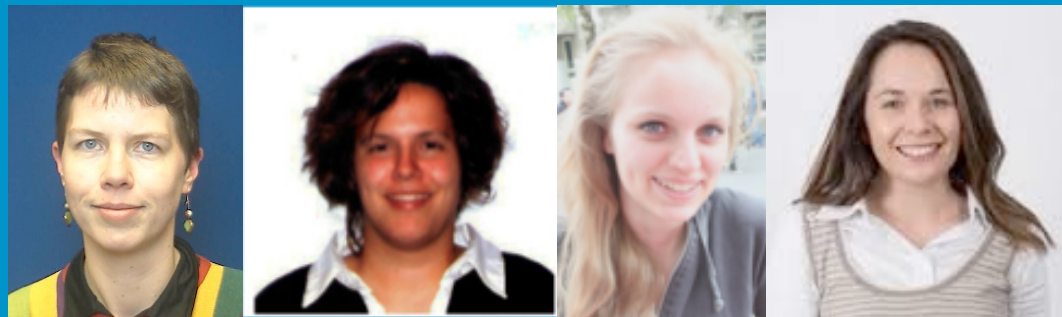


On-site Laboratories and Other Sample Preparation Areas

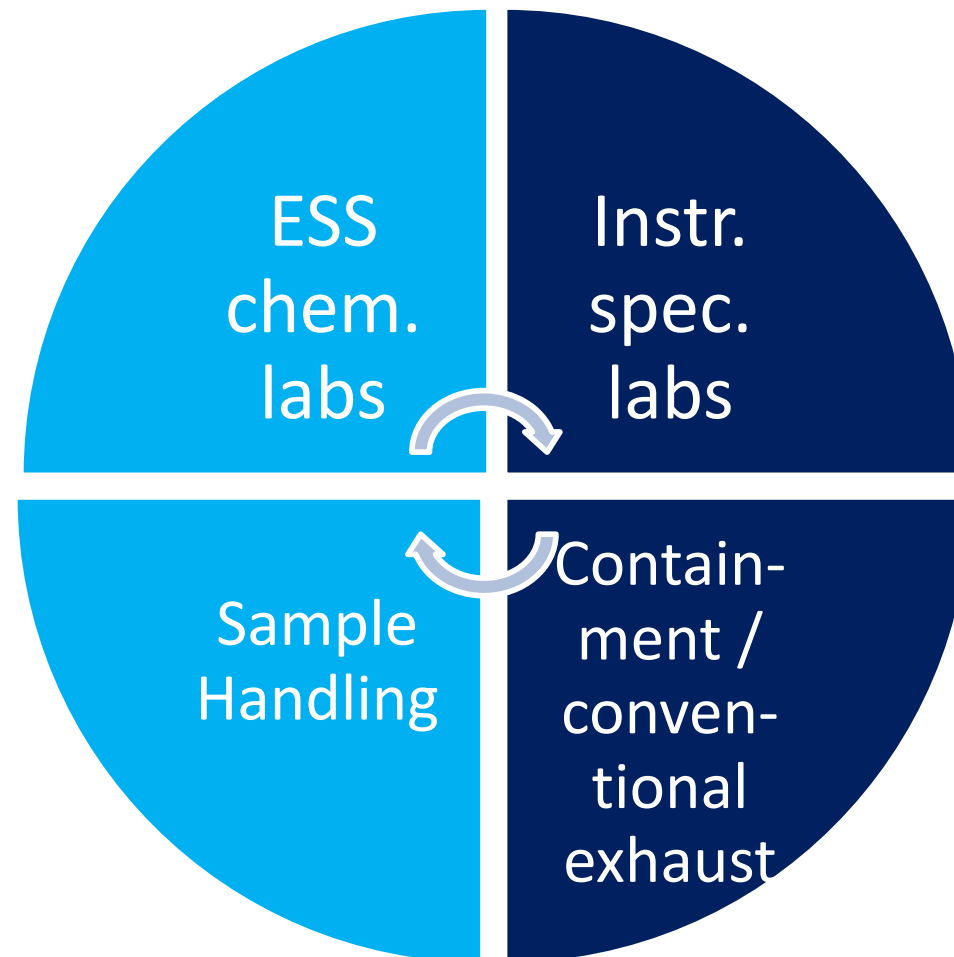


Melissa Sharp, Monika Hartl, Katrin Michel, Anna Leung
Scientific Activities Division

- Chemistry Laboratories
 - WHERE
 - WHEN
 - WHAT
- Instrument specific sample preparation
 - What is provided
 - Containment vs. conventional exhaust
 - Storage of activated samples, how to take them out of the beam
 - What are the limits (fire load/flammable gas storage/
 - Who makes the rules
 - What is provided
 - Who is responsible
- Sample handling rules: “what to plan for”
- Input?

WHAT do we (SULF*) do?

** Sample handling and user labs*



Overview of sample labs

Level 100

Hall 3

E03 (ready Q1 2020):
SLIME (eng. lab): 212 m²

E04 (ready Q1 2020):
LS&SCM basic prep: 94 m²
LS&SCM instr. room: 18 m²
LS&SCM cold room: 12 m²
X-ray diff: 50 m²
Phys. char.: 99 m²
Cutting & polishing: 31 m²
Storage: 11 m²

D04 (ready Q3 2020):
LS&SCM basic prep.: 150 m²
LS&SCM Spec.: 27 m²
LS&SCM Appl.: 19 m²
LS&SCM cold room: 16 m²

Hall 2

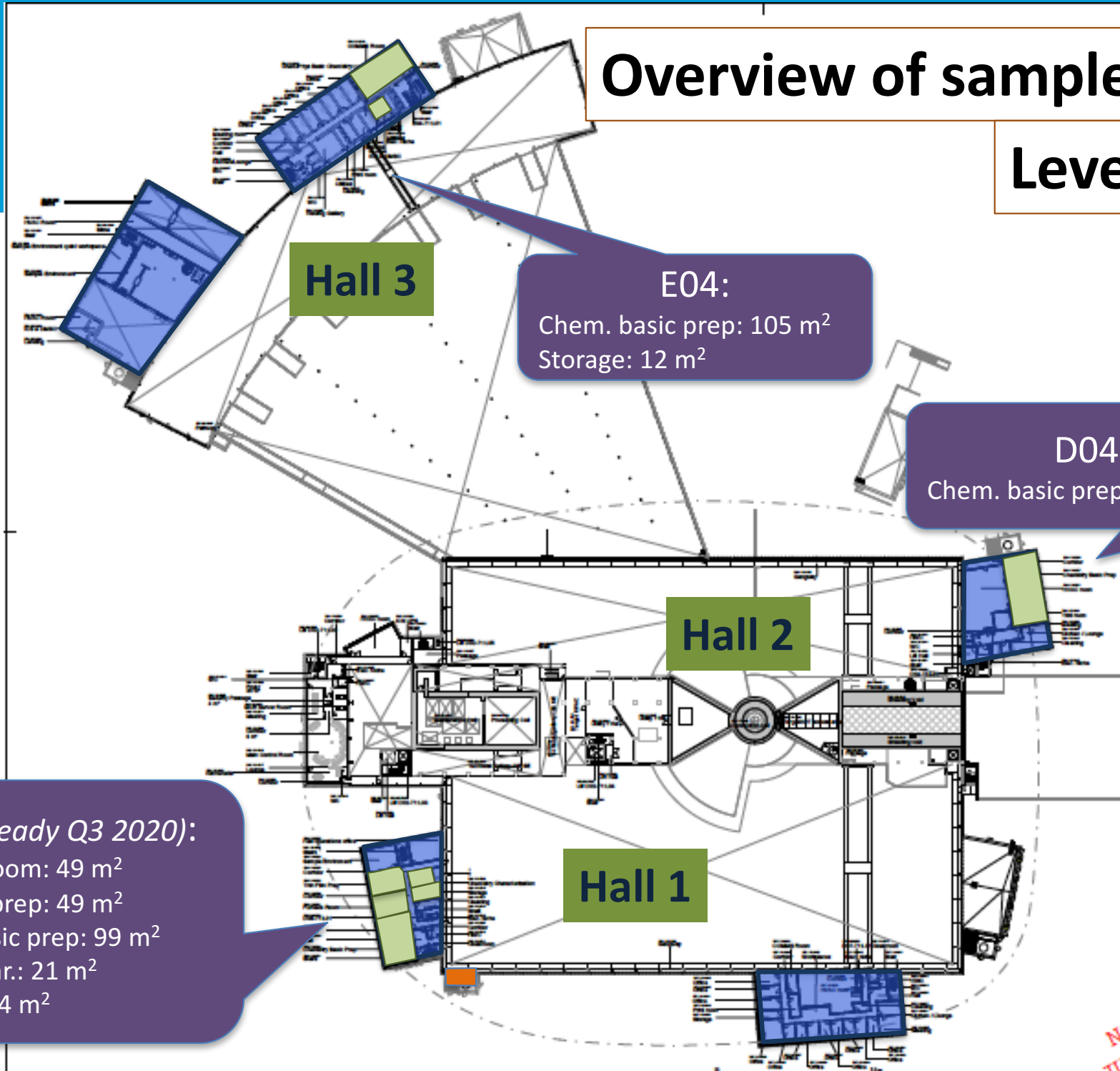
D07 (2021):
LS&SCM basic prep: 154 m²
LS&SCM cold room: 24 m²
LS&SCM instr. room: 46 m²
SAXS: 25 m²

Hall 1

D08 (ready Q1 2020):
Radioactive materials lab (RML): 51 m²
Storage: 50 m²

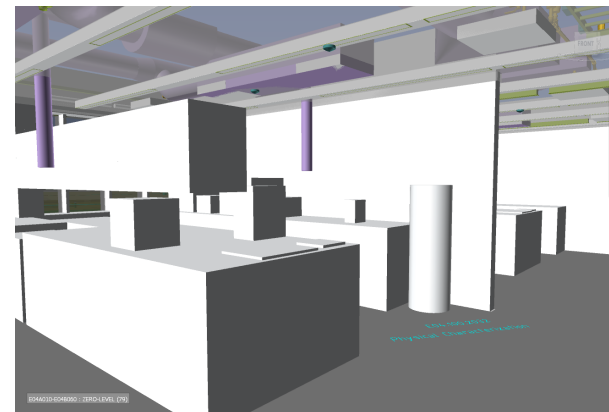
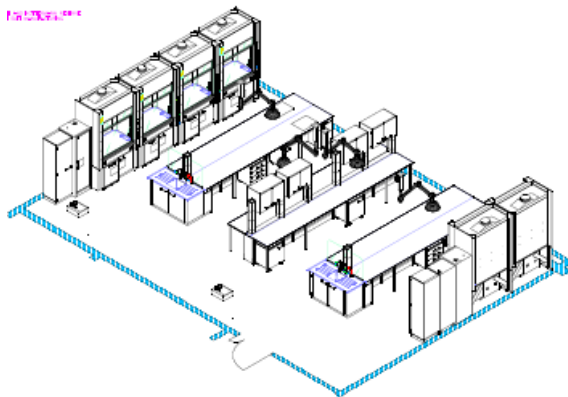
Overview of sample labs

Level 110



Provisions and schedule

- 8 general user preparation labs
 - situated in D04, D07, D08, E03, E04 support buildings
- 15 labs rooms for characterisation, cold rooms, etc.
- E-labs (& RML) to commence furnishing in 2019, on schedule
- General user labs on schedule to be completed in time for nearby instruments starting hot commissioning
 - earliest labs ready for use in 2020



Instrument Specific Laboratories (IS labs)



= Area on each instrument used for handling samples

- Design of area is responsibility of instrument team
- Rules/regulations are responsibility of ESS (ESS-0040840)
- Operation of IS labs by instr. team (staffing/equipment/responsib.)
- SULF will assist in assuring the design/proposed work aligns with the safety requirements (TOLLGATE documents...). Potential restrictions for IS labs:
 - Fire load (flammable solvents & gases)
 - Health hazards (toxicity, nanoparticles, ...)
 - Radioactivity (maximum inventory/ shielded cabinets/...)

Instrument Specific Laboratories (IS labs)



- Whether or not sample can be handled on the instrument will depend on experiment safety review AND provision on instrument (ESS-0024107, ESS-0024109, ESS-0024112)
- REMEMBER: the nearest user lab is not far from you and there we take the responsibility and make provisions for hazardous samples and user support!

Containment vs conventional exhaust



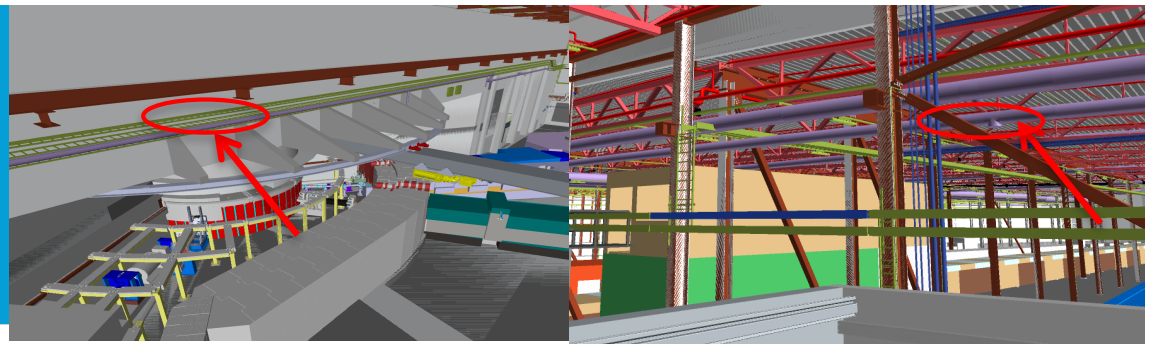
- **Containment exhaust: goes to the main stack of ESS, can be used on sample area even if materials are radioactive**

typical use: pump exhaust in experimental cave to provide containment for radioactive material, for gas flow experiments

- **Conventional ventilation: goes to a regular exhaust (NO radioactive fumes are allowed!)**

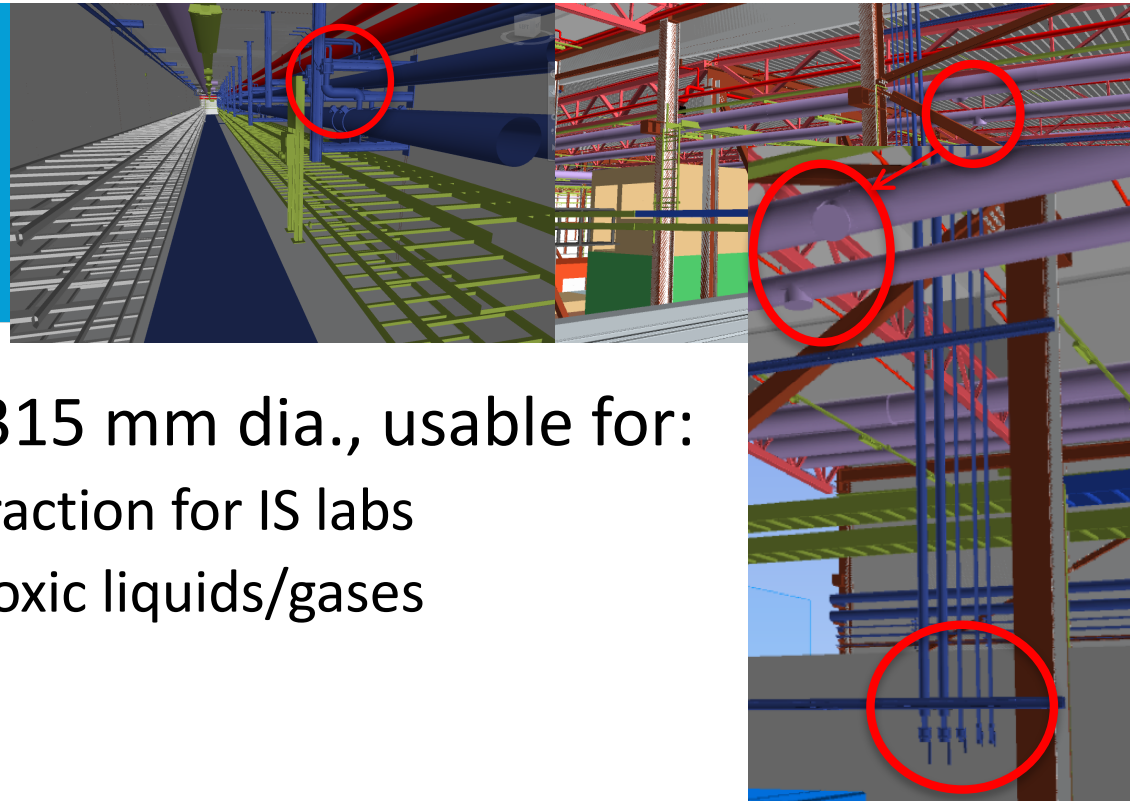
typical use: fume hood in instrument area for preparing samples, exhaust for flammable solvent/gas cylinder cabinet

Containment exhaust



- Containment exhaust => approx. KF 100 mm size usable for:
 - vacuum pump exhaust from sample area
 - slow gas flow over sample
 - ⇒ provided: pipe end on the *wall of D02* (short instr.) / E01-E02 interface (long instr.)
 - ⇒ Needed: run pipe to the experimental cave area of instrument, HEPA filter to catch particles, end flange that is covered when not in use
 - ⇒ requirements wrt: HEPA filter, end flange and pipe size will come out in near future (ESS-0040840 will be updated)

Conventional exhaust



- Conventional exhaust => 315 mm dia., usable for:
 - Fume hoods/overhead extraction for IS labs
 - Cabinets with flammable/toxic liquids/gases
 - Sample storage cabinets
- ⇒ provided: pipe ending in the gallery (short instr.) / E01-E02 interface (long instr.)
- ⇒ Needed: run pipe to the IS lab area, add damper/filter for fume hoods/overhead extraction
- ⇒ Cover end flange if not in use
- ⇒ requirements wrt: damper/filter, end flange and pipe size will come out in near future (ESS-0040840 will be updated)

WHAT do we (SULF) do?

- + rules/regulations (training)
- + provide user labs
- + user support in labs

ESS
chem.
labs

Instr.
spec.
labs

- no support or responsibility for operations
- no maintenance support if not agreed otherwise
- + support with safety req./paperwork

Sample
Handling

Containment /
conventional
exhaust

- + support with safety
- + info what is supplied
- no support/responsibility for operations

- + user/instrument team support in labs
- + rules/regulations
- + support for experiments if high hazard

Lab support



We realize instrument specific labs can be very useful and will support you in providing them !

We are also convinced that more hazardous handling of chemicals can be much better done in the fully equipped user laboratories.

Questions to:

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