
FUNCTIONAL DESCRIPTION FOR SCIENTIFIC ACTIVITIES DIVISION



UNIT: SCIENTIFIC ACTIVITIES DIVISION

	Name	Role/Title
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PURPOSE OF ORGANISATIONAL UNIT

The Scientific Activities Division) is a sub-unit to the Science Directorate [1] and provides scientific, technical and administrative services supporting the Science Directorate in running a user programme, engaging in in-house and collaborative research as well as interacting with the community. Specifically, the purpose of the Scientific Activities Division is to

- develop, install, commission, operate and maintain ESS sample environment systems.
- provide sample services as well as operate and maintain the laboratory facilities
- run the scientific coordination and user office.

Technical, scientific and administrative staff will be provided in respect to the above-mentioned activities but also to assist the neutron scattering instrument scientists and users in preparing and during the experiments. This will ensure that Science is enabled in accordance with the ESS principles of the ESSMS Way Of Working – Enable Science [2][3].

RESPONSIBILITIES

The management team of the Scientific Activities Division is responsible for the line management of the division including staff allocation and provision of on-call support supporting the user programme. Related to the science support projects executed by the division, the management team

- Oversees the strategic investment in sample environment systems as well as laboratory equipment.
- Interacts with internal and external stakeholders including gathering the instrument needs and their feasibility.

The scientific coordination and user office of the Scientific Activities Division enables user access to beam time based on scientific merit and others (innovation, proprietary) incl. industrial access, supports its scientific communities by ensuring community interaction and encourages internal collaborative scientific activities. The scientific coordination and user office is responsible to

- Manage the user programme e.g. proposals, scheduling, user visits, experiment reports and publication record.
- Manage community interactions including user meetings.
- Oversee scientific coordination and in-house scientific activities including the coordination of a PhD programme.
- Organise access for and outreach to industry and industrial users; coordinate industrial liaison activities with other neutron hubs, develop and promote new access modes.
- Participate in an envisaged ESS-wide “welcome function” to streamline the experience for visiting scientists.

The deuteration and macromolecular crystallisation group of the Scientific Activities Division ensures ESS’ ability to prepare deuterated samples and macromolecular crystals. It is responsible to

- Provide deuteration and crystallisation services as part of the ESS user programme to support proposals requiring deuterated materials.
- Operate user support labs for chemical and biological deuteration and macromolecular crystallization.
- Ensure method development and training of users and students.

The sample and user laboratory facilities group provides on-site sample and user laboratory services to ensure the ability to receive, handle, ship, characterise, synthesize, condition, mount, orient and align samples for the ESS user programme. It is responsible to

- Provide support to the user in the on-site user laboratories when handling their samples in preparation or during their beamtime.
- Commission and integrate new equipment and instrumentation for the user laboratory to support the ESS user program
- Operate the on-site chemistry and life science labs.

To perform experiments with multiple / combined parameters incl. user supplied e.g. low and high temperatures, electric and magnetic fields, high pressures and mechanical constraints, stabilized temperature, controlled humidity, gas loading, stopped liquid flow, excited states, conditioned fluids and free surfaces, the sample environment group of the Scientific Activities Division

- Installs and operates sample environment equipment on the instruments together with the instrument teams. This includes training instruments scientists (and users) to use sample environment systems efficiently, reliable and safely.
- Calibrates, maintains and repairs pool sample environment equipment incl. providing consumables and spare parts for such systems.
- Operates the on-site sample environment workshops and associated infrastructure.
- Coordinates the liquid helium cycle and additional sample environment related supplies for experiments.
- Develops and procures new sample environment equipment for specific geometries and parameter range. This includes coordination with expert partners and staying up-to-date with developments in technology and science to adjust to emerging scientific and methodological topics.
- Integrates sample environment systems to ensure rapid reproducible equipment change-over and smooth standardised integration on instrument and instrument control.

Further details including budgetary needs and benchmark with other facilities are provided in [4]

AUTHORITIES

Manage the Scientific Activities Division and its groups and sections; the head of this division reports to the Director for Science.

KEY DELIVERABLES

The key deliverables of the Scientific Activities Division are the services and systems related to samples, users and sample environment to support the ESS user programme. The Scientific Activities Division shall deliver knowledge, understanding, and guidance in the areas necessary to

- operate, maintain, and enhance ESS sample environment systems.
- provide sample services as well as operate and maintain the laboratory facilities
- run the scientific coordination and user office.

If the necessary knowledge does not exist or is not developed to the right level, the Scientific Activities shall develop this knowledge and deliver it to the ESS organisation.

INTERNAL AND EXTERNAL STAKEHOLDERS

Providing essential support and services to the ESS user programme, the groups of the Scientific Activities division also interact with the scientific user communities from both, academia and industry. Additional stakeholders outside ESS include advisory bodies, review panels and funding bodies.

Within ESS and as outlined in [4], groups of the division will primarily interact with stakeholders within the Science Directorate but also additional ESS stakeholders such as

- Strategy and external relations: grant coordination and management
- Communication: public relation and dissemination
- DMSC: user office software maintenance
- Environment, Health and Safety: user safety training, dosimetry, sample (radiological and hazardous) review, management & survey, (radiological) waste management .
- Administration: user site access incl. travel, accommodation, security and work ability.
- Facility management: provision of laboratory and workshop spaces and the maintenance of the related equipment.
- Logistics: for receiving and shipping of goods and samples. Helium vessel logistics
- Neutron Instrument Division: Operation of instrument specific equipment and sample change. Craning equipment on instrument. Provision and maintenance instrument infrastructure, laboratories and (some – as agreed) instrument specific equipment.
- Integrated Control Systems and DMSC: infrastructure, operation and configuration of EPICS network and timing system. Integration with Personal Safety System. Integration with instrument Experiment control system. Networks infrastructure.
- Instr. Technologies - Motion Control and Automation: General motion control and robotics
- Vacuum: Vacuum pump maintenance
- Cryogenics: Helium purification and liquification
- Mechanical workshop: Major mechanical work

REFERENCES

- [1] Functional Description for the Science Directorate (ESS-3132851)
[2] Ways Of Working Enable Science - Strategy (ESS-0419324)
[3] Ways Of Working Enable Science - Area Handbook (ESS-0320815)
[4] Science Directorate WBS Dictionary for Steady-State Operation (ESS-1957058)

DOCUMENT REVISION HISTORY

Revision	Reason for and description of change	Author	Date
1	First issue	Arno Hiess	2020-11-23