



Neutrons - An updated Swedish Strategy for 2025 and beyond

Swedish Neutron Scattering Society, November 2019

Neutron scattering is a highly powerful experimental tool for research across many disciplines ranging from basic science of materials, biology and chemistry to engineering and studies of cultural heritage. The European Spallation Source (ESS) plans to produce its first neutrons in 2022 and to begin user operations in 2023. This provides a unique opportunity to bring the Swedish neutron user community together to take full advantage of the largest investment in research infrastructure in Sweden ever. The Government has asked the funding agencies to help Swedish academia and industry to increase their activity in research and education in neutron scattering as well as to become involved in construction and technical development of the facility and its instruments. The Swedish Neutron Scattering Society (SNSS) identifies the following actions to meet such goals:

- Funding agencies, universities and research institutes need to work together to fully exploit novel scientific opportunities that arise from new powerful facilities. This should include maintaining funding of existing neutron sources to which Sweden contribute as well as dedicated funding to proposals for basic research, as well as to instrument and method development projects. Regarding ESS, Swedish scientists are ready to lead and build at least one instrument in collaboration with other partners.
- Funding agencies and universities must support new user groups to broaden the neutron user community. We want to inspire new activities to strengthen and expand the Swedish neutron science community. Established user groups must also be given adequate resources to support new user groups as well as to extend their competence to new applications. We suggest a funding scheme where both new and experienced users pair up to undertake joint experiments.
- PhD students and postdocs that are trained in and outside the ongoing graduate schools in neutron science have experience in utilizing neutron techniques in a wide range of research areas. We propose that funding agencies and universities establish attractive academic career paths for these young scientists. This will be an efficient way to disseminate and apply the knowledge they acquired to a broader community.
- The growing Swedish neutron user community requires closer links with the facilities to use a wider range of instruments, but also with respect data treatment and modelling. We propose a scheme for joint appointments and exchange programs between scientists at foreign institutions and Swedish institutions.
- Support for Swedish scientists for extended visits and experiments at neutron facilities should be endorsed.
- Collaborations and coordination of joint activities with the photon community should be strengthened, especially activities between ESS and MAX IV.
- The Swedish neutron user community should be proactive and take part in the development of new facilities beyond ESS.