

**MS49-P4** **BioStruct – Norwegian Graduate School in Structural Biology** Arne O. Smalås, Vibeke Os, *Norwegian Structural Biology Centre (NorStruct), Department of Chemistry, University of Tromsø, Norway*  
E-mail: [Arne.Smalas@uit.no](mailto:Arne.Smalas@uit.no)

BioStruct aims to unify PhD-students within molecular and structural biology by establishing National/Nordic meeting places through conferences, workshops and national PhD-courses, and quite important; grant all those activities for the participating students. The activities are expected to improve the scientific quality of the PhD-education, unify the structural biology scientists in Norway and the Nordic countries as well as familiarize the students with innovation processes, and thereby improve career opportunities.

BioStruct offers a research education in structural biology, and covers projects within e.g. *biomedicine, plant biology, marine biology, microbiology, basic biomolecular research and (bio)nanoscience, with focuses on molecular analysis using structural data*. The school is as such technologically based rather than thematic, and it is open to all PhD-students using both experimental and theoretical methods for obtaining structural information of biological molecules.

The Norwegian Graduate School in Structural Biology is led and administered by the Norwegian Structural Biology Centre (NorStruct) at the University of Tromsø. The graduate school includes at present 60 PhD students from 45 research groups, covering 12 Departments from 6 Norwegian universities. The partners, as a whole, generate a unique group of expertise and experimental facilities in structural biology in Norway that ensures a high quality PhD-education. The graduate school will interact closely with relevant industry and is also a member of the Nordic network of PhD schools administered by ISB (The National Doctoral Programme in Informational and Structural Biology).

**Keywords: PhD-training; structural biology;**

**MS50-P1** **Nanopositioning at beamline P11 at PETRA III** P. Fischer, B. Reime, N. Stuebe, T. Pakendorf, and A. Meents  
*DESY/HASYLAB, Germany,*  
E-mail: [pontus.fischer@desy.de](mailto:pontus.fischer@desy.de)

The new synchrotron PETRA III with its very small emittance of 1 nrad allows focusing the full monochromatic photon flux from the undulator into a spot of a very few micrometers only. Such high photon flux densities will e.g. allow structure determinations from very small crystals. At the same time handling such small X-ray beams and samples requires very precise mechanics moving at reasonable speed.

For the “Bio-imaging and Diffraction Beamline P11” at the PETRA III synchrotron in Hamburg we have developed different nano-positioning devices fulfilling these requirements. For centering crystal on the rotation axis of the crystallography experiment a flexure-based x,y positioning has been developed. This device offers a total travel range of 4 mm in both directions with a repeatability of better than 10 nm. The device driven by ‘piezomotors’ operated in closed loop. With a specially developed controller card the piezo motors can be operated with any commercial available servo motor controller card such as the MaxV card.

A stronger piezomotor with a force of 450 N is used for positioning of the X-ray mirrors located in the P11 optics hutch. With a distance of 30 meters between the optics hutch and the experiment a precise angular adjustment of the glancing angle is required to control the beam position at the experiment. Using a monolithic flexure based rotation stage we have achieved an angular positioning accuracy of better than 10 nrad – meaning that the beam position in the experimental hutch can be controlled with sub-micron precision.

