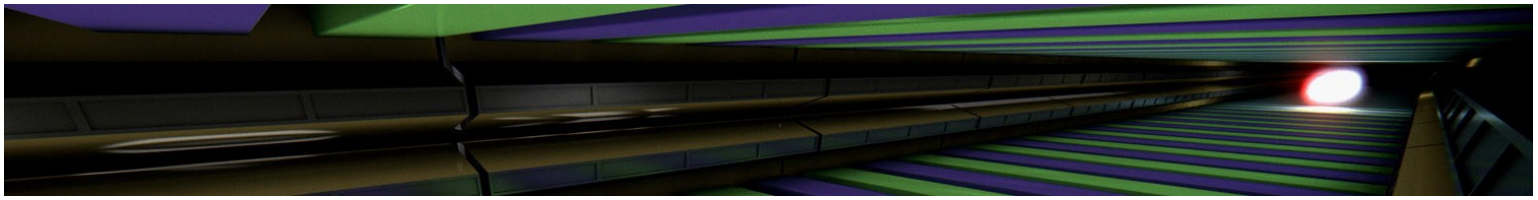


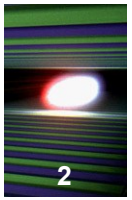
WP-79
Sample Environment

XFEL Project Progress Report (1-2012)

presented by

Joachim Schulz

Start-up of the sample environment group



Biology

- Aerodynamic lens (Uppsala IKC)
- Bio-labs (together with UseXBI UC)
- Droplets
- Advanced preparation

Fixed targets

- Hexapod
- Ultra-fast sample change
- Sandwiches
- Cryo samples
- In gas cell

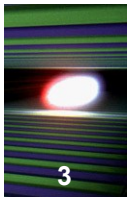
Gases

- COMO UC
- Ultrasonic beam
- Cluster beam
- Gas cell

Liquids

- Droplets in vacuum
- Nano-droplets
- Jets and sheets
  - In air
  - In vacuum

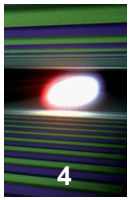
Planning progress



Evaluation of requirements

- Sample environment survey
  - What kinds of sample technologies are foreseen at the beamlines
- Common use labs survey
  - Defining common use labs in the XHQ
  - Defining potential users and tasks
- Bio labs
  - Evaluating space requirements
  - Defining bio safety standards (on-going)

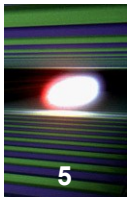
Planning progress



In-kind contribution from Uppsala University (J. Hajdu)

- Contract
  - Schedule and budget fixed in Fall 2011
  - Contract signed December 2011
- Sample injector
  - Milestone 1: Conceptual design finished
  - Milestone 2: Initial R&D finished
- Optical probes
  - Milestone 1: Conceptual design finished
  - Milestone 2: Initial R&D finished

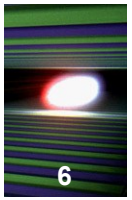
Planning progress



User consortia and further in-kind contributions

- UseXBI: Bio-facility with EMBL and co-applicants
  - Setup a bio facility in XHQ
  - Deliver samples to SPB, SQS and potentially others
- COMO: controlled molecules by J. Küpper (CFEL)
  - Electrically selected, aligned, and oriented molecules
  - Sample delivery method for SQS
- Polish in-kind contributions
  - Defining possible in-kind contributions to sample delivery (on-going)

Plans for 2012



Development projects

- Preliminary labs in HERA-S
  - Space allocation for WP79
  - Set-up of lab equipment
- Liquid jet testing station and development
  - Scientist starting from June 1st
  - Getting started in collaboration with M. Faubel (Göttingen)
  - Setup for jets in air, helium, and vacuum
  - Confined jet for bio samples
- Fast (10Hz) and very fast (MHz) solid sample changer
  - Possibly as in-kind contribution (on-going discussion)

Personal development

Sample Environment staff

Guest researcher (bio-samples)	Charlotte Uetrecht
Scientist for liquid jets and aerosols	Starts June 2012
Instrumentation Engineer	Late 2012
Scientist for solid state and surface science	Late 2012
Scientist for gas phase methods	Early 2013
Lab technician	Summer 2013