SDPC
Skill Development Program @ CeNS

CeNS

Schedule for "X-ray diffraction (XRD) and analysis" course

<table>
<tr><th>Session</th><th>Day – 1</th><th>Day – 2</th><th>Day – 3</th></tr>
<tr><td>Morning</td><td>a) Basics of X-Ray generation and Powder Diffraction
b) Monochromatisation of X-rays
c) Detectors
d) Scanning techniques (1-D and 2-D) space mapping
e) Data collection programs
i. PANalytical 1-D system
ii. Xenocs 2-D system
f) Introduction to Analysis routines</td><td rowspan="2">(a) Profile Fitting for Quantitative Analysis
(b) Glimpse of 2D crystallography
(c) Examples with specific cases of powder and oriented samples
(d) Best practices in the acquisition of reliable experimental data and analysis
(e) Analysis of the acquired 1-D data using
i. Expert Data Viewer operations
ii. Peak analysis using different fit functions, viz., Gaussian, Lorentzian, Pseudo-Voigt, etc.
iii. Indexing using High score plus
(f) Analysis of the acquired 2-D data using
i. marView operations
ii. Reduction of 2D images to line profiles by employing fit2D software
iii. Indexing using Highscore plus</td><td rowspan="2">Evaluation and Discussion</td></tr>
<tr><td>Afternoon</td><td>Demonstration of Equipment:
(a) Live demonstration of running the experiment with PANalytical with 1D PIXEL detector
(b) Data collection using Expert Data Collector Software
(c) Live demonstration of running the experiment with Xenocs-2D with 2D Image Plate Detector
(d) Data collection using mar345 Software
(e) Data collection, optimization of scan parameters</td></tr>
</table>

Instructors:

Dr D.S. Shankar Rao

Dr S. Krishna Prasad

Mr. Shashibhooshan Inchal

Detail about the instrument is provided on the following link:

http://crf.cens.res.in/facilities/GH-XRD/

http://crf.cens.res.in/facilities/GH-PA-XRD/