

CCMX Advanced Course
**“Combining Structural & Analytical Investigations of Matter at the Micro-, Nano
and Atomic Scale”**

5.-8. 11. 2018 ETH Zürich

Station 3

PAAnalytical MPD/MRD

(Location: HCI G510)

XRD demo (60 minutes)

The term *X-ray diffraction* covers a large family of experimental techniques that allow non-destructive material characterization ranging from the atomic scale (e.g. atomic positions, thermal vibration, bond length, bond angles) to molecular (e.g. conformation, packing) and macroscopic (e.g. texture, symmetry, phase composition, phase transition) properties. The demo will show a selection of typical applications in material science. The program allows some flexibility to match the interest of individual groups.

Dr. Thomas Weber

Introduction

- ✓ Instrument design
- ✓ Overview of applications

Experiment 1: Qualitative and quantitative phase analysis

- ✓ Sample preparation and loading
- ✓ Measurement
- ✓ Phase identification
- ✓ Phase quantification

Experiment 2: Thin film reflectometry

- ✓ Concept and sample requirements
- ✓ Measurement
- ✓ Determination of sample thickness, density and roughness on the atomic scale

Experiment 3: Rocking curve measurement

- ✓ Quantification of crystal quality (mosaicity) and alignment of crystallites