

HITEC Methods Day

Title: Materials and Compounds: Chemical Analysis

Date: May 22, 2014

Time: 8:45 – 15:30
afterwards *get together* with snacks and drinks

Location: Forschungszentrum Jülich ► ZEA-2, Build. 2.5, Room „Ohm“ 110

Materials and compounds are essential in Energy and Climate Research. Ph.D.-students in the field therefore often deal with new materials and compounds, which have to be characterized by chemical analytical techniques. Therefore technologies for composition, impurity and structure analysis are one key to success in daily life.

You will learn:

- to receive an overview of the analytical technologies used;
- their physical basis;
- the practical implementation and application fields, as well as
- sampling;
- sample preparation;
- the requirements for the samples to avoid errors in sampling.

The objective is to understand the basic element-, trace element- and isotope analysis technologies. In addition you will learn to understand:

- the interface between sample generation and measurement;
- the planning of experiments, taking into account the analysis and the meaningful interpretation of data to be communicated.

Contents:

Presentation of techniques incl. application in energy and climate for

1. Analysis of elements: XRF, ICP-OES, ICP-MS, SIMS, 3D-Atomprobe-Tomographie
2. Structural analysis: XRD, XPS
3. Non metal analysis: C, S, H, (O)
4. Lab tour through ZEA-3 at the Research Centre Jülich, Dr. Stephan Küppers

Who should attend:

HITEC Ph.D.-fellows;
Postgraduate-, Ph.D.- and postdoctoral fellows from the fields of energy and climate research

HITEC Days

HITEC Days are an inherent part of the graduate school Helmholtz Interdisciplinary Doctoral Training in Energy and Climate Research (HITEC). They devote a whole day to a method or a scientific topic with lectures and discussions. The methodological days serve to encourage scientific interdisciplinarity and will enable the PhD students to extend their range of methods with respect to their own scientific work. HITEC Days always end with a 'Get together', some snacks and drinks. HITEC Days are open for HITEC Ph.D. students and other interested young scientists.

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8:45 – 9:00	Welcome
9:00 – 10:00	Fundamentals and Applications of ICP-Techniques Dr. Volker Nischwitz , Forschungszentrum Jülich, ZEA-3
10:00 – 10:20	Non-Metal Determination Dr. Volker Nischwitz , Forschungszentrum Jülich, ZEA-3
10:20 – 10:45	Coffee-break
10:45 – 11:45	X-Ray Techniques, Fundamentals and Applications Dr. Astrid Besmehn , Forschungszentrum Jülich, ZEA-3
11:45 – 12:00	Ambient Pressure XPS – Application Example Akbar bin Kaderi , Forschungszentrum Jülich, ZEA-3
12:00 – 13:30	Lunch, for docs at own costs at Seecasino
13:30 – 14:00	SIMS, Fundamentals and Applications Dr. Uwe Breuer , Forschungszentrum Jülich, ZEA-3
14:00 – 14:30	3D-Atomprobe Tomographie, Fundamentals and Applications Dr. Aleksei Savenko , Forschungszentrum Jülich, ZEA-3
14:30 – 14:45	Coffee break
14:45 – 15:00	Sampling, Sample Handling and Error Prevention Dr. Volker Nischwitz , Forschungszentrum Jülich, ZEA-3
15:00 – 15:15	Final Discussion
15:15 - ...	Optional: Lab tour by Dr. Stephan Küppers Get-Together with snacks

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