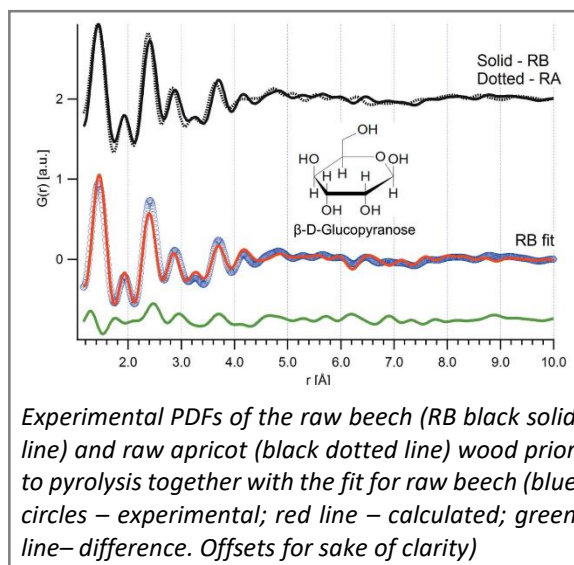


Internship at the ESRF

The wood pyrolysis – route for manufacturing of advanced carbon materials

Wood (and biomass in general) is one of the most abundant and easily accessible material on the earth. Carbonaceous materials derived from residual biomass have been studied for a wide range of applications, including environmental, catalytic, industrial, electronic and agricultural purposes. The applications depend on specific microstructures, leading to distinct macroscopic properties, such as electrical conductivity, surface area or stiffness. These parameters strongly depend on the initial precursor material and treatment conditions. While amorphous and non-graphitizing carbons (which do not turn into graphite even at extremely high temperature) are extensively used, their characterization is nontrivial. Use of large X-ray sources, such as ESRF, is necessary in order to **characterize pyrolyzed carbons with atomic precision and to follow the carbonization process in-situ**. This is critical to further advanced this class of materials.



The QUEST:

- Processing of a set of wood pyrolysis in-situ experiments where various wood samples were heated to high temperature in the absence of oxygen.
- Use of advanced X-ray diffraction analysis techniques (Pair Distribution Function, Rietveld analysis) to determine the key structural transformation in the process with atomic precision.
- Have fun in Grenoble!

When: Summer 2019 or Fall 2019 or Winter 2020

Where: ESRF - European Synchrotron Facility in Grenoble, France

For how long: up to 4 months, but shorter terms also possible

Financial support: Ca. 1000 €/month (depending on qualification, BSc, MSc, ...)

If you are not yet familiar with PDF analysis in general, this internship can be combined with a student job (Hiwi) in the Zobel group to learn the basics of XRD and PDF in Bayreuth, before heading to Grenoble.

If you are interested, please contact Jakub Drnec or Mirijam Zobel for more information.

Jakub Drnec

Beamline Responsible ID03, Beamline Scientist ID31

Experimental Division

European Synchrotron Radiation Facility

p: +33 4 38 88 19 16

email: drnec@esrf.fr



Mirijam Zobel

Assistant Professor Solid State Chemistry
– Messtructured Materials

University Bayreuth

p: +49 921 554355

email: mirijam.zobel@uni-bayreuth.de



UNIVERSITÄT
BAYREUTH