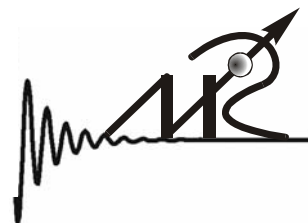




Leibniz Institute for Polymer Research Dresden



Workshop

NMR in complex systems possibilities and challenges

Dresden, October 10 and 11, 2002



[Program and Abstracts](#)

The new laboratory is located in the Max-Bergmann Center for Biomaterials at the Institute for Polymer Research Dresden.

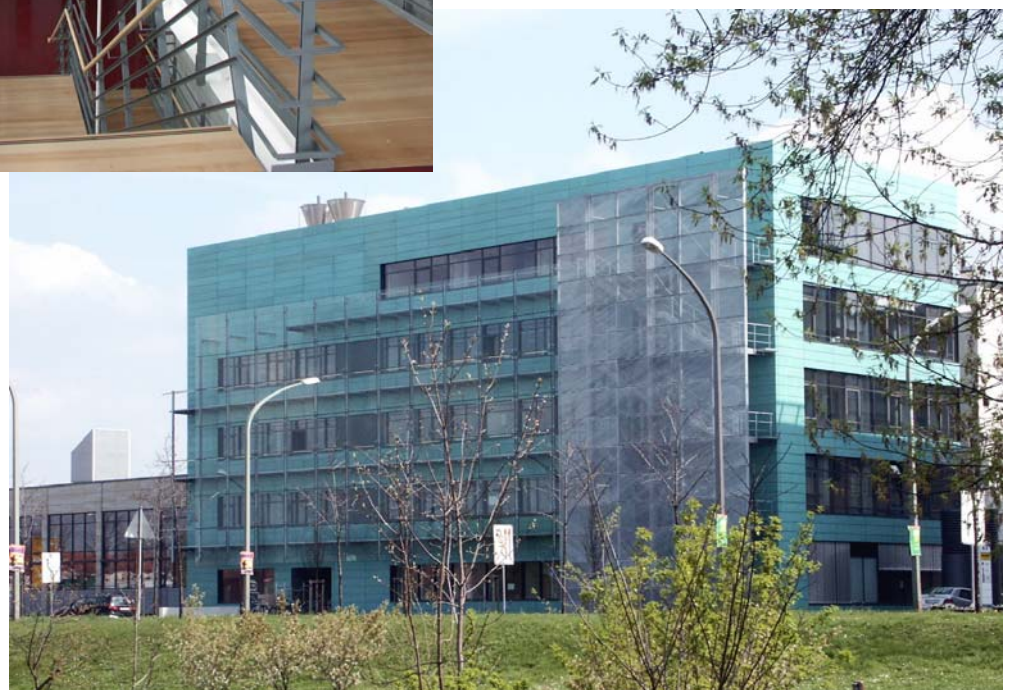


rear side



inside

front side





The lab in April:
>> under construction.<<



A little later:
>> There is plenty
of room at bottom. <<



Do not throw!
The 300 is carefully lowered.



Please wait!
The 500 is looking
forward to be hung up soon.

Ready to work!

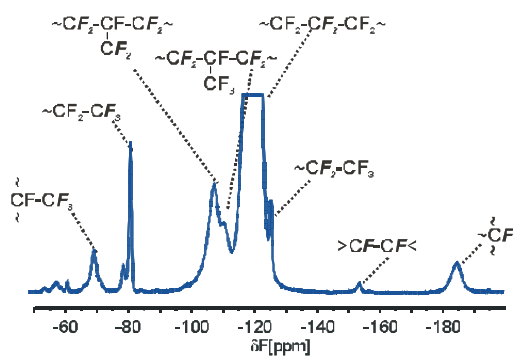


The new laboratory houses two new spectrometers, which are equipped with magnets of 7 Tesla and 11 Tesla respectively, permitting solid-state NMR and pulsed field gradient NMR. The 500 MHz spectrometer is funded from the IPF, funds for a replacement console at the 300 MHz spectrometer from the Federal Ministry for Education and Research are gratefully acknowledged.

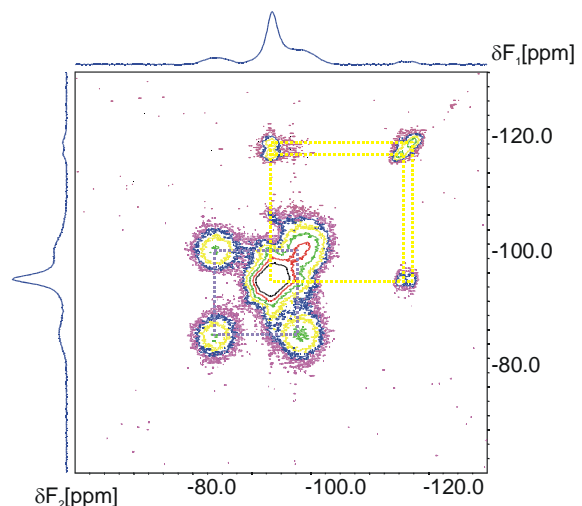
These instruments in a dedicated laboratory provide new possibilities for the work of the NMR group at the IPF. Its research is directed to the areas of solid-state, electrophoresis and rheological NMR. The work includes development of new methods and application to questions originating for other research groups in the IPF.

Solid- state NMR

- structure elucidation based on high- speed MAS
- 2D methods for assignment
- internuclear distances to understand polymer packing and 3D structures are derived from double quantum experiments and Lee-Goldburg crosspolarization



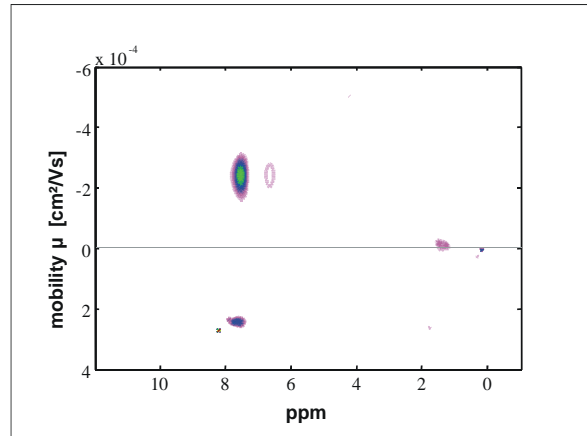
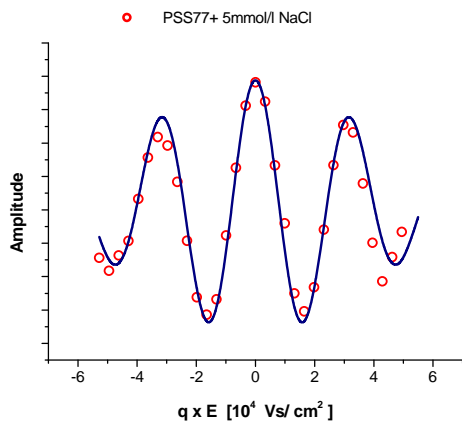
MAS spectrum of radiation-crosslinked PTFE



RFDR spectrum of PVDF

Diffusion and electrophoresis NMR

- hydrodynamic radius and friction from diffusion
coiling of the polyelectrolyte
- force balance between friction and electrostatic force
effective charge

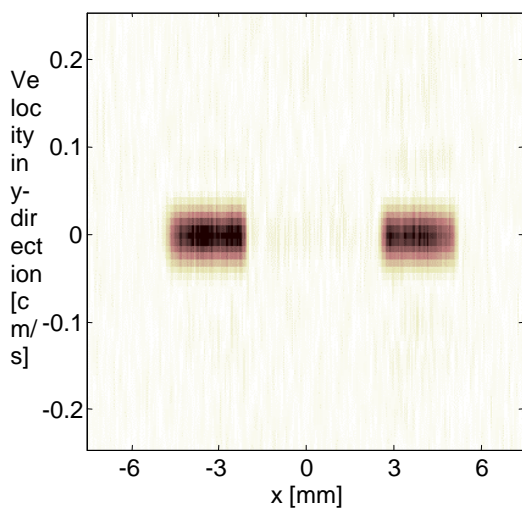


phase modulation from E-NMR of PSSNa

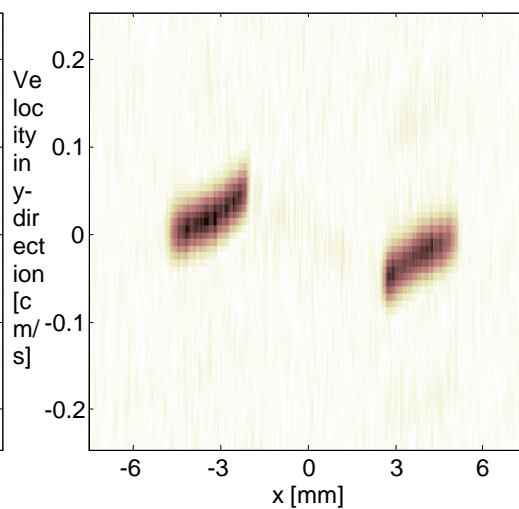
2D mobility plot for model-free evaluation of E-NMR of PSSNa

Rheological NMR

- spatial distribution of polymer melts under shear
- velocity distribution and flow field
- all NMR parameters can be used to generate contrast



flow imaging of a PVC melt at 170°C
static



0.04 Hz