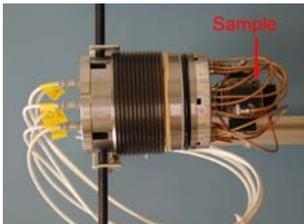
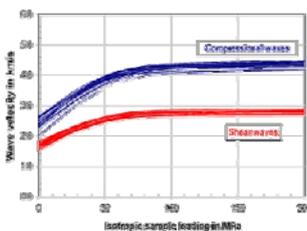


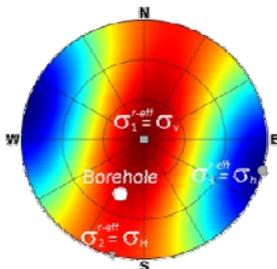
**RACOS<sup>®</sup> (Rock Anisotropy Characterization On Samples) is a set of procedures for determining 3D in situ stresses. This information is essential for evaluating the stability of openings (boreholes, tunnels etc.), for planning hydraulic fracs and for determining directly pore-pressure related reservoir deformations. It also provides crucial input parameters for a variety of other rock mechanics analyses.**



RACOS<sup>®</sup> analyses are based on special laboratory measurements and evaluations. It can be carried out on a small quantity of core at any time after coring and does not need any on-site measurements.

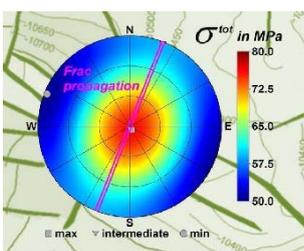


The first step in RACOS<sup>®</sup> is to measure the directional propagation velocities of compressional and shear waves under increasing hydrostatic loading.



In a second step the data are combined in symmetrical 2<sup>nd</sup> order tensors to define the 3D magnitudes and orientations of principal parameters. These data already enable some conclusions to be drawn about in situ structures, rock fabric and main flow directions.

In a third step special RACOS<sup>®</sup> procedures are used to determine directly the 3D anisotropic in situ stresses.



Using the measurement data the pore pressure effectiveness (Biot coefficient in 3D), the total in situ stresses (*present condition*) and stress changes caused by pore pressure modification (*future conditions*) can all be calculated directly. Some conclusions can also be drawn about recent tectonic loading and about palaeo effective stresses (*past conditions*).

**RACOS<sup>®</sup> analyses have so far been carried out successfully on rocks from different lithological strata (claystone, siltstone, sandstone, limestone, anhydrite, clay shale, marble, dolomite, conglomerate, gneiss, amphibolite, granite, basalt and rock salt) in the depth range between 50 and 7000 m.**

**The RACOS<sup>®</sup> service is offered by Dr. Roland Braun - Consultancy in Rock Mechanics in cooperation with Gesteinslabor Dr. Eberhard Jahns.**