

Name: Gabrielsen, Roy Helge

Date of birth: 23.05.1948

Nationality: Norwegian

Present positions: Professor of Petroleum Geology/Structural Geology,
Section Head, Geology and Geophysics (PEGG), University of Oslo
Head Research Group "Basin Development and Petroleum Systems", University of Oslo
Adjunct research scientist, Centre of Integrated Petroleum Research (Center of Excellence),
University of Bergen

Ac. Degrees: C.mag. Univ. of Oslo 1973, C.real. Univ. of Oslo 1976.

Work experience:

1976-1977 Research associate, NAVF, Structural geology, isotope geochemistry, Norwegian Caledonides (SW Norway). Department of Geology, University of Oslo.

1977-1981 Research Associate, Petroleum geology, Remote sensing/fracture tectonics.
Institute of Geology, University of Oslo.

1981-1982 Structural Geologist, Saga Petroleum A/S.

1982-1984 Senior Geologist, Structural Geology, Saga Petroleum A/S.

1984-1987 Staff Geologist, Structural Geology, Saga Petroleum A/S.

1987-1988 Chief Geologist, Norsk Hydro, a.s.

1988-1991 Professor of Petroleum Geology/Structural Geology, University of Bergen.

1989-1991 Chief Scientist, Geological Remote Sensing, Nansen Remote Sensing Centre,
Bergen.

1992-1994 Managing Director, Norsk Hydro a.s., Research Centre, Bergen.

1992-1994 Adjunct Professor of Petroleum Geology/Structural Geology

1994-2003 Professor of Petroleum Geology/Structural Geology, University of Bergen.

2000-2003 Scientific Advisor, Norwegian Geological Survey, Trondheim.

2003-2006 Executive Director, Division for Science, The Research Council of Norway.

2005-2009 Adjunct Professor of structural and petroleum geology, University of Aarhus,
Denmark.

2006-present: Professor of Petroleum Geology, Section Head Petroleum Geology and
Geophysics (PEGG), University of Oslo

2006-present: Adjunct research scientist, Centre of Integrated Petroleum Research (Center of
Excellence), University of Bergen .

Present fields of research

- 1) Structural development of sedimentary basins, with particular emphasis on the North European continental shelf
- 2) Fault architecture and fluid flow in faults and reservoirs
- 3) The architecture and dynamics of orogens
- 4) Post-Caledonian up-lift and Present stress in Scandinavia
- 5) CO₂ sequestration and storage in geological formations
- 6) Experimental structural geology on the scale of the single fault to plate tectonics

Research, part of total activity

According to contract: 50%

Memberships

Academia Europaea

Norwegian Academy of Technological Sciences

The Norwegian Academy of Science and Letters
American Geophysical Union
European Association of Petroleum Geoscientists & Engineers
European Union of Geosciences
The Geological Society of London
International Committee on Basement Tectonics
Norwegian Geological Society
Norwegian Petroleum Society
The Norwegian Svalbard Society
The Norwegian Svalbard-Academy

Committee duties etc, (last 5 years)

1993-present Chairman and co-chairman, Scientific Advisory Board of Netherlands School of Sedimentary Geology (NSG); Universities of Utrecht, Leiden and the Vrije Universiteit Amsterdam.

1996-2006 Member of Conseil Scientifique de Institut Français du Pétrole (Paris)

2001-2008 Member of the Executive Board of GEUS (The Geological Survey of Denmark and Greenland)

2004-2006 Norwegian Delegate European Strategy Forum on Research Infrastructures, European Commission (ESFRI).

2007 Member of the Election Committee for The Norwegian Academy of Science and Letters.

2007 Chairman Evaluation Committee for Earth Sciences, University of Uppsala, Part of "An Overall Evaluation of Research at Uppsala University".

2007 - 2008 Member of Committee for "Evaluation de la direction R13, Géologie – Géochimie – Géophysique" Institut Française du Pétrole.

2007-present Chairman Programme Committee, Oslo Chapter of the Norwegian Academy of Technological Sciences (NTVA)

2007-present Member of the Board of Directors, the Norwegian Academy of Technological Sciences (NTVA)

2007-present Member of the Board of Center of Excellence, University of Oslo "Physics of Geological Processes" (PGP)

Honors and prizes

- 1) Statoil Research Prize for 2000
- 2) Awarded status as Principal Investigator in Centre of Excellence "Center for Integrated Petroleum Research", University of Bergen, appointed by the Norwegian Research Council, 2002.
- 3) Norwegian Petroleum Society Science Prize for 2002
- 4) Falcon Award 2005 awarded by the European Association of Geoscientists and Engineers for the paper: Lothe, A.E., Borge, H. & Gabrielsen, R.H.: Modelling of hydraulic leakage by pressure and stress simulations and implications for Biot's constant: an example from the Halten Terrace. Offshore Mid-Norway. *Petroleum Geoscience*, 10(3), 199-213.
- 5) Special Award 2005, American Association of Petroleum Geologists (AAPG).

Present PhD-students

Erlend Morisbak Jarsve, Department of Geosciences, University of Oslo: Uplift, erosion, paleotopography, and sediment transport systems of southern and mid southwest Norway.
Ruffeis, Cornelia, Department of Geosciences, University of Oslo:

Publications 2005 – present

- Gabrielsen,R.H., Bruton,D.L., Bryhni,I. & Ramberg,I.B., 2005: On the shoulders of giants – Musings on the history of geoscience in Norway. *Norwegian Journal of Geology*, 85, 3-22.
- Redfield,T.R., Braathen,A., Gabrielsen,R.H., Osmundsen,P.T., Torsvik,T.H. & Andriessen,P.A.M., 2005: Late Mesozoic to Early Cretaceous components of vertical separation across the Møre-Trøndelag Fault Complex, Norway. *Tectonophysics*, 395, 233-249.
- Pascal,C., Roberts,D. & Gabrielsen,R.H., 2005: Quantification of neotectonic stress orientations and magnitudes from field observations i Finnmark, northern Norway. *Journal of Structural Geology*, 27, 859-870.
- Gabrielsen,R.H., Braathen,A., Olesen,O., Faleide,J.I., Kyrkjebø,R. & Redfield,T.F., 2005: Vertical movements in south-western Fennoscandia: a discussion of regions and processes from the Present to the Devonian. In: Wandås,B.T.G., Nystuen,J.P., Eide,E. & Gradstein,F. (eds.): *Onshore – Offshore Relationships on the North Atlantic Margin*. Norwegian Petroleum Society Special Publication, 12, 1-28.
- Pascal,C., Roberts,D. & Gabrielsen, R.H., 2006: Present-day stress orientations in Norway as deduced from stress-release features. In: M.Lu, C.C.Li, H. Kjørholt & H.Dahle (eds.): *In-situ Rock Stress. Measurement, Interpretation and Application*. Taylor & Francis Group, London, 209-213.
- Olsen,E., Gabrielsen,R.H., Braathen,A. & Redfield,T.F., 2007: Fault systems marginal to the Møre Trøndelag Fault Complex, Osen-Vikna area, Central Norway. *Norwegian Journal of Geology*, 87, 59-73.
- Lindanger,M., Gabrielsen,R.H. & Braathen,A., 2007: Analysis of rock lenses in extensional faults. *Norwegian Journal of Geology*, 87(4), 361-372.
- Bastesen,E., Braathen,A., Nøttveit,H., Gabrielsen,R.H. & Skar,T., 2009: Extensional fault cores in micritic carbonate – Case studies from the Gulf of Corinth, Greece. *Journal of Structural Geology*, 31, 403-420.
- Herrevold,T., Gabrielsen,R.H. & Roberts,D., 2009: Structural geology of the southeastern part of the Trollfjorden-Komagelva Fault Zone, Varanger Peninsula, Finnmark, North Norway. *Norwegian Journal of Geology*, 89, 305-325.
- Gabrielsen,R.H., Faleide,J.I., Pascal,C., Braathen,A., Nystuen,J.P., Etzelmuller,B. & O'Donnell,S., 2010: Latest Caledonian to Present tectonomorphological development of southern Norway. *Marine and Petroleum Geology*, 27, 709-723, doi: 10.1016/j.marpetgeo.2009.06.004.
- Gabrielsen,R.H., Faleide,J.I., Pascal,C., Braathen,A., Nystuen,J.P., Etzelmuller,B. & O'Donnell,S., 2010: Reply to Discussion of Gabrielsen et al. (2009) by Nielsen et al. (this volume): Latest Caledonian to Present tectonomorphological development of southern Norway. *Marine and Petroleum Geology*, 27, 1-6, doi:10.1016/j.marpetgeo.2010.02.003
- Pascal,C., Roberts,D. & Gabrielsen,R.H., 2010: Tectonic significance of present-day stress relief phenomena in formerly glaciated regions. *Journal of the Geological Society*, London, 167, 363-371.

Thematic description and scientific significance of present research

Structural development of sedimentary basins. Present research on basin development is presently concentrated in the Barents Sea within the framework of the PETROBAR project (see Faeide). The architecture and dynamics of pull-apart basins associated with the shear-

margin and its effect on inversion of basin margin fault systems are particularly emphasized and the results are integrated in the bulk model for development of the Barents Sea basin system. The work addresses generic problems in basin formation, but is also of significance for understanding the petroleum systems of the Barents Sea. The project is supported by the Norwegian Research Council and involves intimate collaboration with industry (Statoil), research institutes (IRIS, the Norwegian Geological Survey, Volcanic Petroleum Basin Research (VPBR) and academic institutions (PGP, UiOslo, UiBergen, UNIS (Spitsbergen), the Russian Academy of Sciences, St. Petersburg and VU Amsterdam).

Fault architecture and fluid flow in faults and reservoirs is integrated in the studies performed at CIPR (Center of Integrated Petroleum Research), University of Bergen. The studies, which include both field studies and experimental work, are focused on the intrinsic architecture of faults, but also include the effects of minor structures like deformation bands, both as single structures and as elements in damage zones. Partners in the projects, which are supported by the Norwegian Research Council are industry (Statoil, ConocoPhillips, Wintershall) research institutes (Norwegian Geotechnical Institute) and academic institutions (Stanford University).

The architecture and dynamics of orogens are addressed in three projects, namely the PETORBAR-project (see above) which include studies of the West Spitsbergen Fold and Thrust Belt, the Oslo Region Caledonides and the Pyrenees. The latter activity takes place within the PyrTec-project (ESF) that is chaired from the University of Bergen encompasses a number of European universities (Bergen, Rennes, Barcelona, Oviedo, VU Amsterdam, Strasbourg, Edinburgh). The activity from the University of Oslo is particularly analogue structural/tectonic modelling performed at the Laboratory of The University of Rennes and establishment of the uplift history of the frontal parts of the Pyrenean mountains. The research activity in the *Caledonides in the Oslo Region* is centred around several small projects, particularly focusing on out-of-sequence thrusting, the architecture of nappes and the development of foreland basins. Several master students are involved in the projects, the first of whom will graduate summer 2010.

CO₂-sequestration projects have lately been strongly focused upon in geoscience in Norway. To meet this demand ongoing and new research activity have been coordinated at the Department of geosciences in cases where this is relevant. The activity is lead by prof. Per Aagaard. The following of my activities are included: Post-Caledonian uplift, sedimentation on the Norwegian shelf (source-to-sink) and contemporaneous and recent geological stress assessment (see reference list; both on-going activities) are closely linked to the mapping and assessment of possible reservoirs for the storage of CO₂ in the south Norwegian shelf and in Skagerrak. Partners in this activity are Geus (Denmark), Chalmers (Sweden), the Norwegian Geotechnical Institute, Geological Survey of Norway and industry (Statoil). Structural reservoir characterization with respect to reservoir fluid communication (cooperation with CIPR, see above) is another activity that is relevant in this context.

Comment on working situation

After having spent three years (2003-2006) out of academia, serving as one of three division directors of the Norwegian Research Council, a period where I was not allowed to have any formal, personal affiliation with Norwegian research institutions, I am about re-establish my portfolio of research projects.

