

Petroleum Geoscience

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Definition

The term “geoscience” or “geosciences” has been used in two different ways. Sometimes, it is a short term for “geological sciences” and is thus synonymous with “geology.” It may also mean “Earth science” or “Earth sciences” which would include not only geology but also geophysics, geochemistry, meteorology (and other atmospheric sciences), oceanography (and other hydrological sciences), as well as soil science (pedology) (Jackson 1997). “Petroleum geoscience” embraces all geological, geophysical, and geochemical disciplines which are used for exploration and production of petroleum in its various physical forms (oil, natural gas, condensate, and bitumen). Four main branches, depending on their methodology, are usually recognized in the academia and industry: Petroleum geology, petroleum geochemistry (closely associated with organic chemistry), petroleum geophysics (an important aspect of exploration geophysics), and petrophysics (including formation evaluation and well logging and closely related to both geophysics and petroleum engineering). All of these branches are interrelated and should be used in an integrated manner for petroleum exploration.

Although rooted in geosciences, “petroleum geoscience is intimately linked with making money, indeed profit. The role of the petroleum geoscientist, whether in a state company, a massive multinational company, or a small independent company, is to find petroleum (oil and hydrocarbon gas) and help produce it so that it can sold” (Gluyas and Swarbrick 2004,

p. 1). Petroleum geoscience is also an active field of education and investigation in many universities around the world with research projects and consortia often sponsored by oil companies. Petroleum geoscience, whether in academia or industry, is such a vast field that no single person can claim to be a petroleum geoscientist; the experts are usually categorized as exploration geologists, petroleum geochemists, petrophysicists, seismic geophysicists, and so forth.

The term “petroleum geoscience” has been used in the title of the journals *Petroleum Geoscience* (published quarterly by the Geological Society of London and the European Association of Geoscientists and Engineers) and *Petroleum Geoscience* (an open-access, peer-reviewed journal published by China University of Petroleum under the brand SpringerOpen) as well as in the titles of several textbooks such as those by Gluyas and Swarbrick (2004) and Bjørlykke (2015).

Cross-References

- ▶ [Petroleum Exploration](#)
- ▶ [Petroleum Geochemistry](#)
- ▶ [Petroleum Geology](#)
- ▶ [Petroleum Geophysics](#)

References

- Bjørlykke K (2015) *Petroleum geoscience: From sedimentary environments to rock physics*, 2nd edn. Springer, Heidelberg. 662 p
- Gluyas J, Swarbrick R (2004) *Petroleum geoscience*. Blackwell Publishing, Oxford. 376 p
- Jackson J (1997) *Glossary of geology*, 4th edn. American Geological Institute, Alexandria. 769 p