Quellenverzeichnisse Erdöl-Lüge

Teil 1 — Quellen

Thermodynamik

Kenney, J.F., Kutcherov, V.G., Bendeliani, N.A. & Alekseev, V.A. (2002). *The evolution of multicomponent systems at high pressures: VI. The thermodynamic stability of the hydrogen–carbon system: The genesis of hydrocarbons and the origin of petroleum.* Proceedings of the National Academy of Sciences, 99(17), 10976–10981.
https://doi.org/10.1073/pnas.172376899

Ölfelder im kristallinen Grundgebirge & Exploration

Kutcherov, V.G. & Krayushkin, V.A. (2010). *Deep-seated abiogenic origin of petroleum: From geological assessment to physical theory.* Reviews of Geophysics, 48, RG1001.
https://doi.org/10.1029/2008RG000270

Krayushkin, V.A. (1984, 1989). Arbeiten zur abiogenen Exploration im Dnieper-Donets-Becken. Die 57%-Erfolgsquote und die Entdeckung von über 50 Feldern im kristallinen Grundgebirge sind in der Übersichtsarbeit von Kutcherov & Krayushkin (2010) zusammengefasst (siehe oben).

Nachfüllungs-Phänomene

Gold, T. (1985). *The origin of natural gas and petroleum, and the prognosis for future supplies.* Annual Review of Energy, 10, 53–77.
https://doi.org/10.1146/annurev.eg.10.110185.000413

Gold, T. & Soter, S. (1980). *The deep earth gas hypothesis.* Scientific American, 242(6), 154–161.
https://www.jstor.org/stable/24966345

Jøtul-Hydrothermalfeld (höchste CH_4-Konzentrationen)

Bohrmann, G. et al. (2025). *Hydrothermal vent fluids with exceptionally high methane concentrations at the sediment-hosted Jøtul field, Knipovich Ridge.* Communications Earth & Environment.
https://doi.org/10.1038/s43247-025-02962-2

Abiotische Methan-Produktion in Subduktionszonen (10,8 Mt/Jahr)

Zhang, L.J. et al. (2023). *Massive abiotic methane production in eclogites during cold subduction.* National Science Review, 10, nwac207.
https://doi.org/10.1093/nsr/nwac207

Die „unveränderlichen" Biomarker verändern sich dramatisch

Bushnev, D.A., Burdel'naya, N.S. et al. (2026). *Evolution of hydrocarbon biomarkers during stepwise hydrous pyrolysis of Domanik Formation source rock: Implications for oil–oil and oil–source rock correlation.* Acta Geochimica.
https://doi.org/10.1007/s11631-026-00893-z

Das Mengenproblem (Riesengasvorkommen)

Die Gasvorkommen im Deep Basin (12,5 × 10^{12} m^3), San Juan Basin und Milk River werden in der Kutcherov & Krayushkin (2010)-Review ausführlich diskutiert (siehe oben).

Teil 2 — Quellen

Experimentelle Reproduktion

Kenney, J.F., Kutcherov, V.G., Bendeliani, N.A. & Alekseev, V.A. (2002). *The evolution of multicomponent systems at high pressures: VI. The thermodynamic stability of the hydrogen–carbon system: The genesis of hydrocarbons and the origin of petroleum.* Proceedings of the National Academy of Sciences, 99(17), 10976–10981.
https://doi.org/10.1073/pnas.172376899

Scott, H.P., Hemley, R.J., Mao, H.K., Herschbach, D.R., Fried, L.E., Howard, W.M. & Bastea, S. (2004). *Generation of methane in the Earth's mantle: In situ high pressure–temperature measurements of carbonate reduction.* Proceedings of the National Academy of Sciences, 101(39), 14023–14026.
https://doi.org/10.1073/pnas.0405930101

Kolesnikov, A., Kutcherov, V.G. & Goncharov, A.F. (2009). *Methane-derived hydrocarbons produced under upper-mantle conditions.* Nature Geoscience, 2, 566–570.
https://doi.org/10.1038/ngeo591

Peña-Alvarez, M. et al. (2021). *Abiotic methane production from diamond and graphite with H_2 at upper mantle conditions.* Nature Communications.
https://doi.org/10.1038/s41467-021-26664-3

H_2-Unmischbarkeit im Mantel

Bali, E., Audétat, A. & Keppler, H. (2013). *Water and hydrogen are immiscible in Earth's mantle.* Nature, 495, 220–222.
https://doi.org/10.1038/nature11908

Thomas Golds Grundlagenarbeiten

Gold, T. (1992). *The deep, hot biosphere.* Proceedings of the National Academy of Sciences, 89(13), 6045–6049.
https://doi.org/10.1073/pnas.89.13.6045

Gold, T. (1985). *The origin of natural gas and petroleum, and the prognosis for future supplies.* Annual Review of Energy, 10, 53–77.
https://doi.org/10.1146/annurev.eg.10.110185.000413

Gold, T. & Soter, S. (1980). *The deep earth gas hypothesis.* Scientific American, 242(6), 154–161.
https://www.jstor.org/stable/24966345

Kohlenwasserstoffe in Mantel-Xenolithen & Präkambrische Schilde

Sherwood Lollar, B. et al. (2002). *Abiogenic formation of alkanes in the Earth's crust as a minor source for global hydrocarbon reservoirs.* Nature, 416, 522–524.
https://doi.org/10.1038/416522a

Sherwood Lollar, B. et al. (2006). *Unravelling abiogenic and biogenic sources of methane in the Earth's deep subsurface.* Chemical Geology, 226(3–4), 328–339.
https://doi.org/10.1016/j.chemgeo.2005.09.027

Sherwood Lollar, B. et al. (2008). *Isotopic signatures of CH_4 and higher hydrocarbon gases from Precambrian Shield sites: A model for abiogenic polymerization of hydrocarbons.* Geochimica et Cosmochimica Acta, 72(19), 4778–4795.
https://doi.org/10.1016/j.gca.2008.07.016

^{13}C-^{13}C-Clumping-Beweis

Taguchi, K. et al. (2022). *Distinguishing biotic and abiotic hydrocarbons by ^{13}C-^{13}C clumping in ethane.* Nature Communications.
https://doi.org/10.1038/s41467-022-33538-9

Unmischbare H_2O–CH_4-Fluide in Subduktionszonen

Zhang, L.J. et al. (2024). *Immiscible H_2O–CH_4 fluids in subduction zones: Evidence from carbonated eclogites in the Western Tianshan.* Communications Chemistry.
https://doi.org/10.1038/s42004-024-01355-4

Zhang, L.J. et al. (2023). *Massive abiotic methane production in eclogites during cold subduction.* National Science Review, 10, nwac207.
https://doi.org/10.1093/nsr/nwac207

CH_4-getriebene Brekziierung und Seismizität

Giuntoli, F., Vitale Brovarone, A. & Menegon, L. (2023). *Methane-rich fluids cause brecciation and potential seismic activity in subducted rocks.* Nature Communications.
https://doi.org/10.1038/s41467-023-44641-w

Vitale Brovarone, A. et al. (2017). *Massive production of abiotic methane during subduction evidenced in metamorphosed ophicarbonates from the Italian Alps.* Nature Communications, 8, 14134.
https://doi.org/10.1038/ncomms14134

Oman-Ophiolith (aktive abiogene Produktion)

Nothaft, D.B. et al. (2025). *Radiocarbon evidence for active abiotic methane production in the Samail Ophiolite, Oman.* Scientific Reports.
https://doi.org/10.1038/s41598-025-34170-5

Hydrothermalquellen-Forschung

Proskurowski, G. et al. (2008). *Abiogenic hydrocarbon production at Lost City hydrothermal field.* Science, 319, 604–607.
https://doi.org/10.1126/science.1151194

McDermott, J.M., Seewald, J.S., German, C.R. & Sylva, S.P. (2015). *Pathways for abiotic organic synthesis at submarine hydrothermal fields.* Proceedings of the National Academy of Sciences, 112(25), 7668–7672.
https://doi.org/10.1073/pnas.1506295112

Charlou, J.L., Donval, J.P., Fouquet, Y., Jean-Baptiste, P. & Holm, N. (2002). *Geochemistry of high H_2 and CH_4 vent fluids issuing from ultramafic rocks at the Rainbow hydrothermal field.* Chemical Geology, 191, 345–359.
https://doi.org/10.1016/S0009-2541(02)00134-1

Jøtul-Hydrothermalfeld

Bohrmann, G. et al. (2025). *Hydrothermal vent fluids with exceptionally high methane concentrations at the sediment-hosted Jøtul field, Knipovich Ridge.* Communications Earth & Environment.
https://doi.org/10.1038/s43247-025-02962-2

Übersichtsarbeiten zur abiogenen Theorie

Kutcherov, V.G. & Krayushkin, V.A. (2010). *Deep-seated abiogenic origin of petroleum: From geological assessment to physical theory.* Reviews of Geophysics, 48, RG1001.
https://doi.org/10.1029/2008RG000270

Etiope, G. & Sherwood Lollar, B. (2013). *Abiotic methane on Earth.* Reviews of Geophysics, 51, 276–299.
https://doi.org/10.1002/rog.20011

Sephton, M.A. & Hazen, R.M. (2013). *On the origins of deep hydrocarbons.* Reviews in Mineralogy and Geochemistry, 75, 449–465.
https://doi.org/10.2138/rmg.2013.75.14

Abiogene Theorie in Japan — Überblick mit Fokus auf Exploration

Komatsu, T. (2017). *The theory of abiogenic origin of petroleum and its recent progress.* Journal of the Japanese Association for Petroleum Technology, 80(4), 275–286.
https://doi.org/10.3720/japt.80.275

Experimentelle Arbeiten unter Mantelbedingungen (Ergänzung)

Goncharov, A.F., Chellappa, R.S., Kolesnikov, A., Somayazulu, M., Kutcherov, V.G. & Hemley, R.J. (2010). *Abiogenic hydrocarbons produced under upper-mantle pressure-temperature conditions.* EGU General Assembly 2010, abstract #10896.
https://meetingorganizer.copernicus.org/EGU2010/EGU2010-10896.pdf

Kutcherov, V.G. et al. (2010). *Synthesis of hydrocarbons under upper mantle conditions: Evidence for the theory of abiotic deep petroleum origin.* Journal of Physics: Conference Series, 215, 012103.
https://doi.org/10.1088/1742-6596/215/1/012103