# Article information:

压力和应力循环对水力裂缝、低孔隙、各向异性砂岩|流体流动的影响施普林格链接  
<https://link.springer.com/article/10.1007/s00603-022-03043-y>

# Article summary:

1. Fossil fuels are the main source of global energy consumption, and demand is increasing. Hydraulic fracturing is used to develop and produce unconventional reservoirs with low permeability.

2. Different approaches have been applied to study the pressure at which the rock first yields (fractures), known as the breakdown pressure. The expression may be further modified by adding poroelastic effects which account for the rock being both porous and permeable.

3. Numerous studies have attempted to link the fracture process to permeability enhancement via numerical models, while laboratory measurements of flow through fractures under controlled conditions have used images of post-test fracture aperture or morphology of post-test shear fracture planes.

# Article rating:

Appears moderately imbalanced: The article provides some useful information, but is missing several important points or pieces of evidence that would be required to present the discussed topics in a balanced and reliable way. You are encouraged to seek a more balanced perspective on the presented issues by exploring the provided research topics and looking at different information sources.

# Article analysis:

The article provides a comprehensive overview of hydraulic fracturing and its effects on fluid flow in low permeability rocks such as sandstone, shale, and mudrock. It discusses various approaches that have been used to study the pressure at which rocks yield (fracture), known as breakdown pressure, including linear elasticity, poroelasticity, and matrix permeability. It also mentions numerous studies that have attempted to link fracture process to permeability enhancement via numerical models and laboratory measurements of flow through fractures under controlled conditions.

The article appears to be reliable in terms of its content; however, it does not provide any evidence for some of its claims or explore counterarguments or potential risks associated with hydraulic fracturing. For example, it does not mention any potential environmental impacts or risks associated with hydraulic fracturing such as water contamination or seismic activity caused by fracking operations. Additionally, it does not discuss any possible alternatives to hydraulic fracturing that could be used instead in order to reduce environmental impacts or risks associated with this method. Furthermore, it does not provide any sources for some of its claims such as “Fossil fuels are the main source of global energy consumption” or “Hydraulic fracturing is used to develop and produce unconventional reservoirs with low permeability” which makes it difficult to assess their accuracy or trustworthiness.

In conclusion, while the article provides a comprehensive overview of hydraulic fracturing and its effects on fluid flow in low permeability rocks such as sandstone, shale, and mudrock, it lacks evidence for some of its claims and fails to explore counterarguments or potential risks associated with this method which makes it difficult to assess its trustworthiness and reliability fully.

# Topics for further research:

* Environmental impacts of hydraulic fracturing
* Alternatives to hydraulic fracturing
* Water contamination from hydraulic fracturing
* Seismic activity caused by hydraulic fracturing
* Global energy consumption sources
* Permeability enhancement from hydraulic fracturing

# Report location:

<https://www.fullpicture.app/item/4cc04872fca200412104efaec600f0ee>