# Article information:

Implementation of an elastoplastic constitutive model to study the proppant embedment in coal under different pore fluid saturation conditions: A numerical and experimental study - ScienceDirect  
<https://www.sciencedirect.com/science/article/pii/S0016236122003532>

# Article summary:

1. Proppant embedment is a significant issue in coal fracking treatments that reduces fracture conductivity and can generate coal fines, particularly under different pore fluid saturation conditions.

2. A realistic material constitutive model appropriate for coal is required to evaluate the proppant embedment behavior, considering the plastic deformation of the rock material and the complete stress-strain curve of coal.

3. The post-peak mechanical properties of coal are crucial to research because the long-term effect of propped hydraulic fractures tends to be in the post-peak deformation region, and yield criteria should be considered in establishing a constitutive model.

# 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:

作为一篇科技论文，该文章的内容相对客观和专业。然而，在阅读过程中，仍然可以发现一些潜在的偏见和缺失。

首先，文章没有充分探讨可能存在的风险和负面影响。虽然提到了煤层气生产中可能出现的问题，如砂岩颗粒嵌入等，但并未深入探讨这些问题对环境和人类健康的潜在影响。此外，文章也没有提及任何可能存在的替代方案或解决方案。

其次，文章似乎只关注了煤层气生产中技术问题的解决方案，并没有考虑到社会、经济和政治因素。例如，煤层气开采可能会引起土地使用权纠纷、水资源争夺等社会问题；同时，由于能源市场波动等原因，煤层气开采也可能不具有可持续性。

此外，在描述煤岩力学特性时，文章似乎忽略了不同地质条件下煤岩力学特性的差异性。实际上，在不同地质条件下进行煤层气开采时需要考虑更多因素，并且需要制定相应的策略来应对这些因素。

最后，在描述实验结果时，文章没有提供足够的数据支持其结论。例如，在讨论“微裂缝”的形成时，并未给出相关数据或图表来证明这一点。

总之，尽管该文章在技术方面提供了有价值的信息和见解，但它仍然存在一些潜在偏见和缺失。为了更全面地评估煤层气开采对环境、社会和经济造成的影响以及寻找可持续发展方案，我们需要更加全面、客观、平衡地考虑各种因素。

# Topics for further research:

* Negative impacts of coal seam gas production
* Alternative solutions to coal seam gas production
* Social
* economic
* and political factors in coal seam gas production
* Geological variations in coal seam mechanics
* Insufficient data to support experimental results
* Comprehensive and balanced evaluation of coal seam gas production impacts

# Report location:

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