# Article information:

Numerical Modelling of Microwave Heating Assisted Rock Fracture | SpringerLink
<https://link.springer.com/article/10.1007/s00603-021-02685-8>

# Article summary:

1. Microwave heating applications of rock have been developed since the 1960s as an energy-efficient comminution method.

2. Different minerals react differently against microwave irradiation, with some being absorbent and others transparent.

3. Numerical studies have been used to simulate thermal stresses generated in a rock particle exposed to high electric field strength microwave energy.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article is generally reliable and trustworthy, providing a comprehensive overview of the numerical modelling of microwave heating assisted rock fracture. The article is well-researched and provides evidence for its claims, such as citing relevant research papers and experiments that have been conducted in this area. Furthermore, the article does not appear to be biased or one-sided, presenting both sides of the argument equally and exploring counterarguments where necessary. Additionally, there is no promotional content present in the article, nor any partiality towards any particular point of view or opinion.

However, there are some points that could be improved upon in terms of trustworthiness and reliability. For example, while the article does mention potential risks associated with microwave heating applications of rock (such as hotspots formation), it does not provide any detailed information on how these risks can be mitigated or avoided. Additionally, while the article does provide evidence for its claims (such as citing relevant research papers), it does not explore all possible counterarguments or missing points of consideration that could be made regarding this topic. Finally, while the article does provide a comprehensive overview of numerical modelling techniques used to simulate thermal stresses generated in a rock particle exposed to high electric field strength microwave energy, it does not discuss other methods that could potentially be used for this purpose (such as finite difference time domain or finite integration technique).

# Topics for further research:

* Microwave heating assisted rock fracture mitigation
* Finite difference time domain modelling of rock fracture
* Finite integration technique for rock fracture simulation
* Hotspot formation in microwave heating assisted rock fracture
* Thermal stress analysis of rock particles exposed to microwave energy
* Numerical modelling of microwave heating assisted rock fracture

# Report location:

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