# Article information:

低温下钢纤维混凝土的 I 型断裂：用 3D 细观尺度建模表征 - ScienceDirect  
<https://www.sciencedirect.com/science/article/pii/S0167844223000496?via%3Dihub>

# Article summary:

1. A 3D mesoscale model of SFRC (steel fiber reinforced concrete) specimens with different steel fiber volume fractions (Vf = 0.0%, 0.5%, 1.0% and 1.5%) was developed through finite element analysis to study the Ι fracture behavior of SFRC under low temperature.

2. Simulation results showed that the fracture energy, unstable fracture toughness and characteristic length of SFRC increased significantly with increasing fiber volume fraction and decreasing temperature.

3. Prediction formulas were proposed to predict the fracture energy, characteristic length and unstable fracture toughness of SFRC at low temperature.

# 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 in its reporting on the research conducted on steel fiber reinforced concrete (SFRC) under low temperatures, as it provides detailed information on the methodology used for the research, as well as a comprehensive discussion of the results obtained from simulations and experiments. The article also presents prediction formulas for predicting the fracture energy, characteristic length and unstable fracture toughness of SFRC at low temperatures, which are based on data collected from simulations and experiments.

However, there are some potential biases in the article that should be noted. For example, while discussing the effects of temperature on SFRC’s mechanical properties, only positive effects are mentioned; no mention is made of any possible negative effects that may occur due to lower temperatures or higher fiber volume fractions. Additionally, while discussing the prediction formulas proposed for predicting SFRC’s mechanical properties at low temperatures, no mention is made of any potential limitations or errors associated with these formulas; this could lead readers to overestimate their accuracy or reliability when applied in practice. Furthermore, while discussing various parameters related to SFRC’s mechanical properties such as elastic modulus and tensile strength, only room temperature values are discussed; no mention is made of how these parameters may change at lower temperatures or higher fiber volume fractions.

In conclusion, while overall reliable and trustworthy in its reporting on research conducted on steel fiber reinforced concrete under low temperatures, this article does contain some potential biases that should be noted by readers before applying its findings in practice.

# Topics for further research:

* Effects of low temperature on SFRC mechanical properties
* Limitations of prediction formulas for SFRC at low temperatures
* Elastic modulus of SFRC at low temperatures
* Tensile strength of SFRC at low temperatures
* Impact of fiber volume fraction on SFRC mechanical properties
* Unstable fracture toughness of SFRC at low temperatures

# Report location:

<https://www.fullpicture.app/item/81c8f7ead09b5ab879f79cb41388e5c5>