

Aerogel could protect firefighters from heat

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Scientists have developed a new ceramic aerogel which has excellent thermal insulating properties. It is a composite material of nanocrystal fibres embedded in an amorphous matrix. The material is much less brittle than normal ceramics.

The team designed a zircon matrix using a technique that produces a candyfloss type felt. This was then folded into a zig-zag pattern. Regions of nanocrystal fibres were formed within the matrix using a heating process.

The combination of crystalline fibres and amorphous matrix helps the material absorb strain. The material could be used for firefighter's clothing or insulating spacecraft.



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In the future the ceramic aerogel could be used in thermal protective clothing

Questions

1. Suggest why the material could be used for firefighter's clothing.
2. Describe a composite using the terms 'binding' and 'reinforcement'.
3. Describe the difference between crystalline and amorphous structures.