Scientists discover a flexible fabric that can be used to make a real-life superhero suit

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- The lightweight flexible fabric has been 3D-printed from nylon plastic polymers.
- It stiffens up when put inside a vacuum-packed plastic envelope.
- The fabric could be used for making protective gear, exoskeletons and even erect temporary bridges.

Scientists from Singapore's Nanyang Technological University (NTU) and the California Institute of Technology (Caltech) have developed a flexible fabric that looks like a normal cloth but can transform into a hard material. This is a new 'chain mail' fabric that can actually stiffen on demand — something similar to Batman's bulletproof cape.

It's a lightweight fabric in nature, and it has been 3D-printed from nylon plastic polymers. It is also made up of hollow eight-sided triangular shapes that interlock with each other. The chainmail fabric can also be made from 3D printed aluminium that can be even be used to withstand an even stronger impact.

When the fabric is put inside a vacuum-packed plastic envelope, it stiffens up to reach its rigid state. NTU

This fabric has the capability of toughening up on demand making it 25 times more rigid and holding up over 50 times than its own weight. NTU demonstrated holding the fabric in its natural state where it's flexible and lightweight. When the fabric is put inside a vacuum-packed plastic envelope, it stiffens up to reach its rigid state. The NTU and Caltech scientists compare this fabric to that of Batman's cape which is flexible but it can be used as a glider when required.

Possible use cases

There can be multiple use cases for this chainmail fabric. Some of the possible use cases could be to make protective exoskeletons and protective gear for athletes. It could also be used as lightweight armour-like bulletproof vests to help protect against an impact. More use cases include using the fabric to create equipment that will help the elderly stand and carry heavy loads. In the future, it could even be used to erect temporary bridges in the future. The team plans to explore more methods of stiffening the fabric such as through magnetism, electricity or temperature.