

Just Like Batman's Cape, This Smart Chain Mail-Like Fabric Can Stiffen on Demand

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NTU Singapore and the California Institute of Technology (Caltech) researchers have made an innovative new 'chain mail' fabric can be flexed just like cloth, but stiffen on

demand when required. This lightweight fabric is entirely 3D-printed from nylon plastic polymers and consists of hollow, interlocking octahedrons (eight equal triangular faces). When this material is encased in a plastic envelope and vacuum-packed, it becomes 25-times more rigid and can hold more than 50 times its own weight. [Read more](#) for a video and additional information.

Just like Batman's cape, which is normally flexible, it can become rigid to stop bullets or act as a glider when the superhero needs to hop off a building. This opens the door to lightweight body armor that can harden to protect a user against an impact, protective athletic gear, and exoskeletons for the mobility impaired.

Moving forward, the team is looking to improve the material and fabric performance of their chain mail and to explore more methods of stiffening it, such as through magnetism, electricity or temperature," said NTU Singapore.