Engineers set to create bomb-proof 'curtains'

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Engineers from the University of Exeter are working on an innovative new project to create curtains made from a ‘smart’ material that could minimize injuries inflicted by a terrorist attack.

The team, which is led by Professor Ken Evans in conjunction with spin-out company Auxetix Ltd, hopes to use special auxetic materials to create ‘blast curtains’ that could catch glass fragments and debris blown through windows by an explosion.

Bomb blasts cause damage by generating a pressure shockwave, which shatters materials in its path. The majority of those injured in an attack are injured by the flying debris that results.

The fibres in conventional fabrics react to this pressure by stretching and tearing as the pressure pulls them taut, which stops them catching debris. However when auxetic materials stretch they show a unique property – they get fatter rather than thinner. This means that under tension a large number of pores open up across the surface of the material allowing the shock wave through leaving it intact to catch glass and other debris.

Professor Ken Evans, Head of the School of Engineering, Computer Science and Mathematics at the University of Exeter said: ‘If we can harness the unique properties of auxetic materials, it’s possible that we may be able to create a ‘smart’ fabric that could instantly react to the pressure generated by a bomb blast. This would allow us to create protective curtains that could be used in office buildings, on army bases and even in the home to protect those inside. We believe this would

create a far superior method to the Kevlar curtains that are currently used, as they are so dense that most natural light is blocked.'

John Heathcoat & Co, based in Tiverton, Devon, will help develop the prototype material, which will then be further tested by the Home Office Scientific Development Branch (HOSDB). There the material will be put into test chambers behind glass panels and subjected to an explosive blast to test its ability to minimise the penetration of glass into the chamber.

Source: University of Exeter