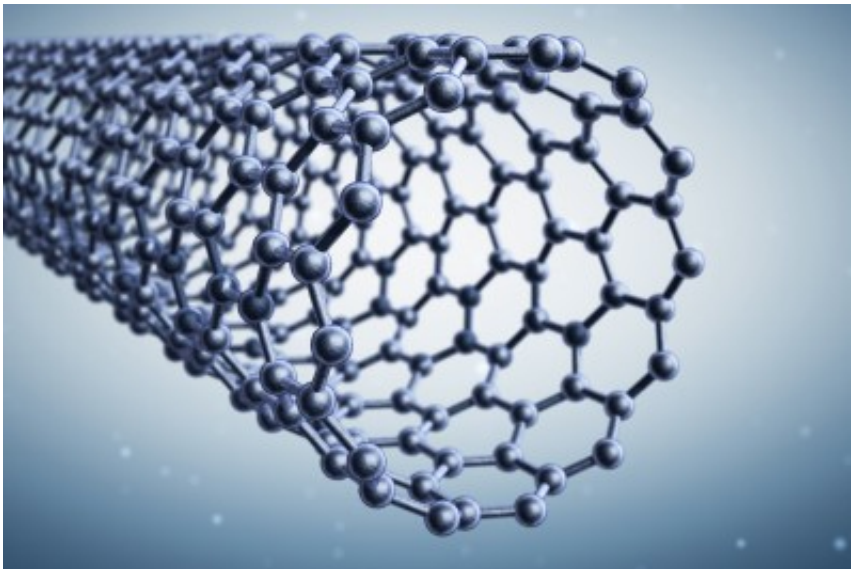


Revolutionary new graphene elastomer exceeds sensitivity of human skin

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A new sponge-like material, discovered by Monash researchers, could have diverse and valuable real-life applications. The new elastomer could be used to create soft, tactile robots to help care for elderly people, perform remote surgical procedures or build highly sensitive prosthetic hands.

Graphene-based cellular elastomer, or G-elastomer, is highly sensitive to pressure and vibrations. Unlike other viscoelastic substances such as polyurethane foam or rubber, G-elastomer bounces back extremely

quickly under pressure, despite its exceptionally soft nature. This unique, dynamic response has never been found in existing soft materials, and has excited and intrigued researchers Professor Dan Li and Dr Ling Qiu from the Monash Centre for Atomically Thin Materials (MCATM).

According to Dr Qiu, "This [graphene](#) elastomer is a flexible, ultra-light material which can detect pressures and vibrations across a broad bandwidth of frequencies. It far exceeds the response range of our skin, and it also has a very fast response time, much faster than conventional polymer elastomer.

"Although we often take it for granted, the pressure sensors in our skin allow us to do things like hold a cup without dropping it, crushing it, or spilling the contents. The sensitivity and response time of G-elastomer could allow a prosthetic hand or a robot to be even more dexterous than a human, while the flexibility could allow us to create next generation flexible electronic devices," he said.

Professor Li, a director of MCATM, said, "Although we are still in the early stages of discovering graphene's potential, this research is an excellent breakthrough. What we do know is that graphene could have a huge impact on Australia's economy, both from a resources and innovation perspective, and we're aiming to be at the forefront of that research and development."

Dr Qiu's research has been published in the latest edition of the prestigious journal *Advanced Materials* and is protected by a suite of patents.

Provided by Monash University

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