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IISc develops tunable coloured films for use in smart sensors for healthcare

20 March 2024 | News

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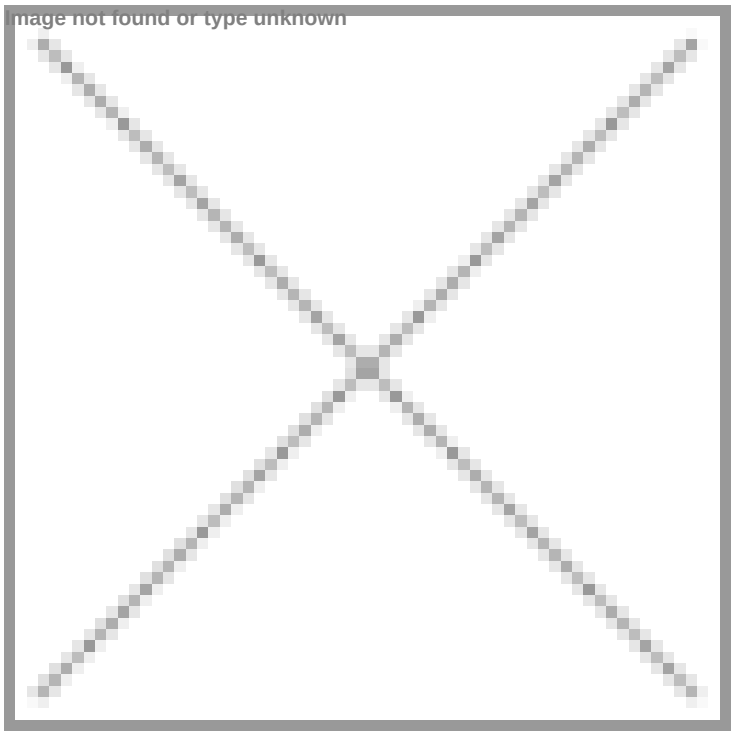

Researchers at the Indian Institute of Science (IISc), Bengaluru have developed flexible films that exhibit bright colours purely by virtue of their physical structure, without the need for any pigment. When stretched, the films exhibit a change in colour as a response to the mechanical deformation.

To design these films, the team devised a novel cost-effective and scalable single-step technique that involves evaporating gallium metal to form nano-sized particles on a flexible substrate. Their method allows the simultaneous fabrication of multiple structural colours responsive to mechanical stimuli.

The team has also shown how these films can be used for a variety of applications, from smart bandages and movement sensors to reflective displays.

The team demonstrated one major application: a body movement sensor. A strip of the film, when attached to the finger, changed colour when the finger was bent, helping to sense movement in real time.

Nature-inspired structurally coloured materials have found broad applications in displays, wearable electronics, visual sensors, and anti-counterfeiting tags. In recent years, scientists have been trying to design materials which can change colour in response to an external mechanical stimulus.