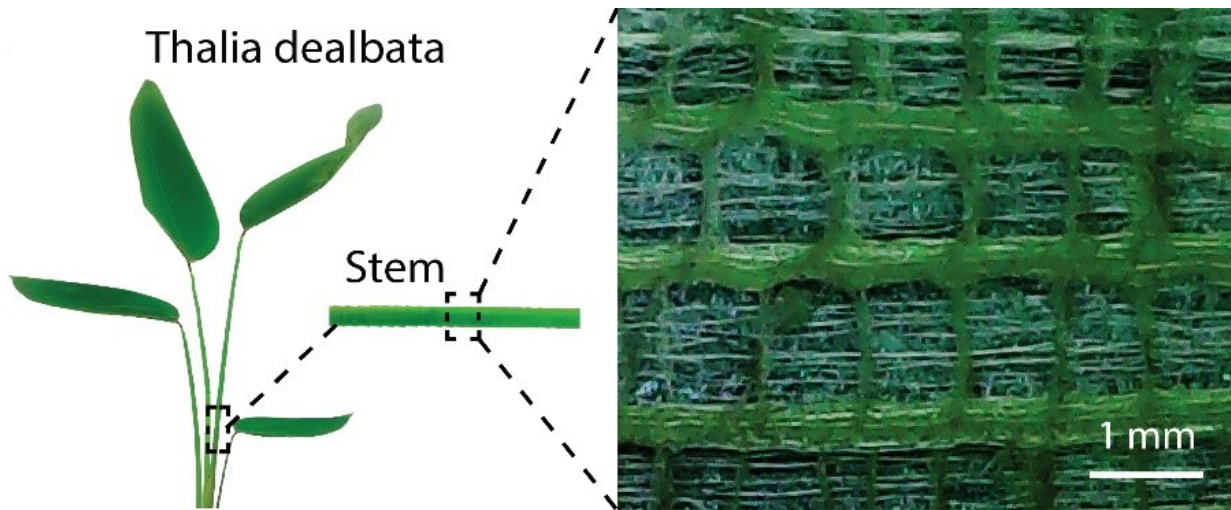


Plant inspiration could lead to flexible electronics

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A plant stem inspired researchers to develop a new, versatile aerogel for possible use in bendable devices. Credit: American Chemical Society

Versatile, light-weight materials that are both strong and resilient are crucial for the development of flexible electronics, such as bendable tablets and wearable sensors. Aerogels are good candidates for such applications, but until now, it's been difficult to make them with both properties. Now, researchers report in *ACS Nano* that mimicking the structure of the "powdery alligator-flag" plant has enabled them to make a graphene-based aerogel that meets these needs.

Aerogels are light, porous materials that are already used in many applications, such as pollution control and insulation. To create a better aerogel for potential incorporation into bendable electronics, Bai and colleagues took inspiration from the stem structure of the powdery alligator-flag plant (*Thalia dealbata*), a strong, lean plant capable of withstanding harsh winds.

The team used a bidirectional freezing technique that they previously developed to assemble a new type of biomimetic graphene aerogel that had an architecture like that of the plant's stem. When tested, the material supported 6,000 times its own weight and maintained its strength after intensive compression trials and was resilient. They also put the aerogel in a circuit with an LED and found it could potentially work as a component of a flexible device.

The researchers say that the approach could help them improve other types of materials in the future.

More information: "Biomimetic Architected Graphene Aerogel with Exceptional Strength and Resilience" *ACS Nano* (2017).

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