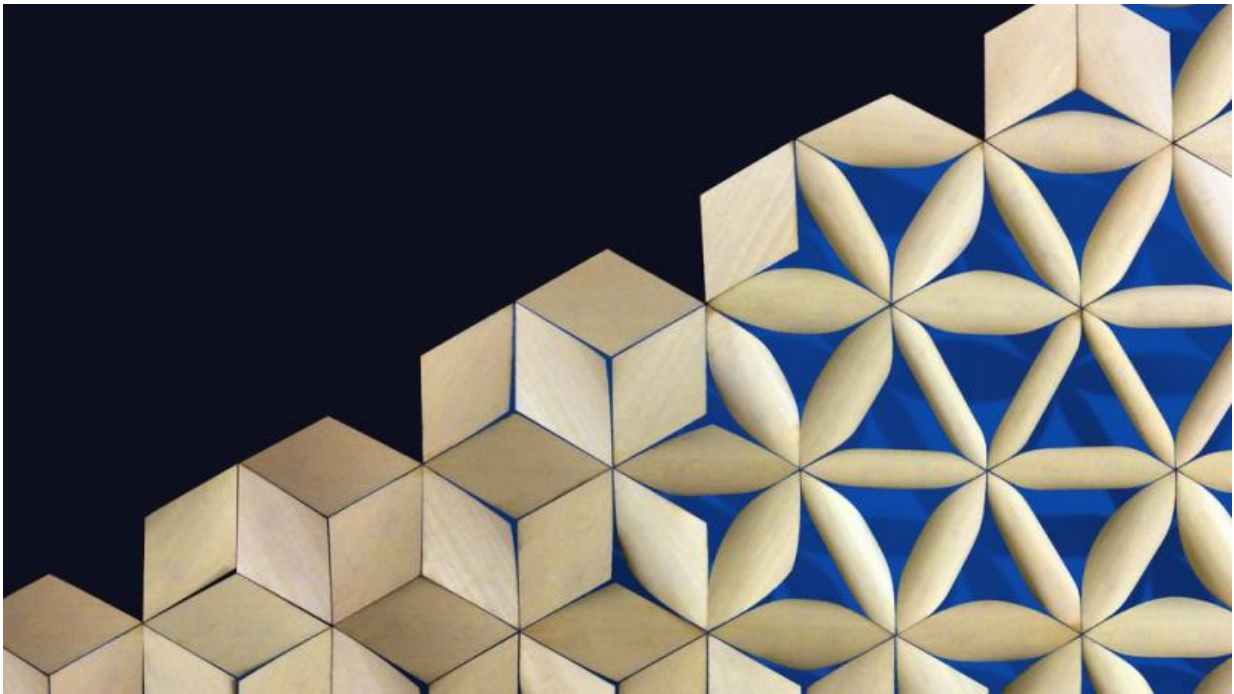


A shape-shifting building material based on pinecones

July 10 2015, by Bob Yirka



Chao Chen, a student in the Masters Program at the Royal College of Art in London has come up with a unique building material—a surface that changes its appearance automatically when exposed to water, whether directly, or via humidity. He has told the media that the new material was inspired by pinecones.

Pinecones open when dry and close when wet, to provide optimal conditions for spreading seeds. They do so by simply reacting to water—it seeps into the woody leaves (microsporophylls) and causes them to droop. Inspired by this simple process Chen dissected some cones to see how they were put together and then used what he learned to create objects or coverings that could prove useful or would offer something nice to look at.

He has created an artificial pinecone, a wall hanging (or covering) that self-modifies when it gets wet to reveal artful coloring, an overhang that allows light to pass through when the sun is shining, but closes when it rains to keep those underneath dry and a strip for insertion into the soil in which a plant resides that changes color when the plant needs watering. His objects are made of veneer, fabric and film which work well—as can be seen in [video clips](#) Chen has produced—the trick is in getting the veneer to bend in the right way when it gets wet. Once that has been figured out, it is a matter of replicating the materials in an appealing or useful way. The objects created thus far likely represent just a fraction of those that could be made, particularly if artificial misting is used on very small bits of material that react with extremely small amounts of moisture. Billboards that automatically change their message, for example, or flat screens that serve as wall art when not in use.

There is one problem holding things up however, the objects all suffer from an inherent problem—weakness. Chen says he is not sure yet how well his objects will stand up to nature, but has begun testing to find out—thus consumers likely will not see any of his products for sale anytime soon.



More information: www.rca.ac.uk/students/chao-chen/

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