



Edible paint | Photo source Ritchie Valens on Unsplash

Innovation > Science > Beetle inspired ultra-white paint alternative is edible

BEETLE INSPIRED ULTRA-WHITE PAINT ALTERNATIVE IS EDIBLE

 SCIENCE

Researchers at the University of Cambridge studied beetle scales to develop an ultra-white, edible and eco-friendly coating material

Researchers at the [University of Cambridge](#) have discovered how to make an ultra white coating using only organic materials. The team arranges thin, spaghetti-like strands of naturally occurring cellulose into certain structures, combining thin strands with thicker strands. Through this process, they create a brilliant white material.

The inspiration behind the idea came from studying a type of insect, the *Cyphochilus* beetle found in South East Asia. These beetles produce a white pigment in the scales of their hard outer shells. It consists of chitin, a molecule commonly detectable in the cell walls of plants and fungi. The team's discovery was that cellulose, more readily available for mass production, is manipulable to behave like the chitin in the beetles.

White is actually a complicated color. For humans to see a surface as white, all wavelengths of light hitting and then shining back off the object have to reflect back equally. Most everyday white products, such as white paint, add titanium or zinc oxide to even out this reflectivity. While effective at producing a shine, these additives can be harmful and do not easily break down. By replacing those oxides with an organic substitute, cellulose, the new coating material is more effective and also eco-friendly. As cellulose is naturally available in plants, the new material could be entirely safe to consume. This would enable its use in food and pharmaceuticals. The process, published in

[Advanced Materials](#), has been patented, paving the way for commercial venture under the university's business arm, Cambridge Enterprises.

This isn't the first time we've covered an innovation inspired by biology. Whether it's solar panels based on [insect-eyes](#), coral-inspired [3D-printed tyres](#) or a bioplastic made from [algae](#), researchers are turning increasingly to nature as a source for sustainable materials. What product inspired by nature will we be seeing next?

13th April 2018

Email: sarah.collins@admin.cam.ac.uk

Website: www.cam.ac.uk/research

Contact: sarah.collins@admin.cam.ac.uk

[Download PDF](#)