

# Taking cues from nature to develop colors that do not fade

June 8 2015, by Samantha Sipe

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This African Starling displays its vibrant, iridescent structural colors produced by ordered melanosomes. Credit: Liliana D'Alba

Imagine a favorite T-shirt that does not dull with time, or a car that never

needs a new coat of paint. A study done at The University of Akron may be able to make this a reality in the near future. Research performed at UA sought to recreate structural color patterns found in bird feathers to generate color without the timely and outdated use of pigments and dyes. Structural color should never diminish in hue and could even potentially be altered at someone's preference.

UA associate professor of biology, Dr. Matthew Shawkey, his colleague Dr. Ali Dhinojwala, Morton Professor of Polymer Science, and Ming Xiao, graduate student, recently published a paper in a joint project with the University of California, San Diego. Shawkey and his team sought to produce synthetic particles that mimic the tiny packets of melanin found in feathers.

## **Milestone in biomimicry research**

These tiny packets of synthetic melanin produce structural color, like in a bird's feather, when they are packed into layers. Structural color occurs through the interaction of light with materials that have patterns on a tiny scale, which reflect light to make some wavelengths brighter and others darker.

The discoveries published in the journal *ACS Nano* reflect a milestone in biomimicry research. These findings are just the beginning in a growing field that seeks to improve human life by imitating the success of natural designs and methods.

Structural color in particular has many potential functions. According to Dhinojwala, 'One could think about applications as sensors, photo-protectors, and even perhaps an approach to create a wide range of colors without using any pigments,' he says.

Shawkey praises the benefits of [structural color](#), saying, 'Pigments are

both financially and environmentally costly, and can only change color by fading. Structural colors can, in theory, be produced from more common, environmentally friendly materials and could potentially be changed depending on the environment or your whims.'

**More information:** *ACS Nano*,  
[pubs.acs.org/doi/abs/10.1021/acsnano.5b01298](https://pubs.acs.org/doi/abs/10.1021/acsnano.5b01298)

Provided by University of Akron

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