

The Unusual Origin of Peacock Brown

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Many animals' colors originate from photonic crystals, which reflect specific colors of light as a result of their nanoscopic structures, rather than from pigments, which derive their colors from their chemical composition. The brown in peacocks' tails is a particularly unusual type of photonic crystal coloration, according to research soon to appear in the journal *Physical Review E*.

Brown is a mixture of light of different colors. Generally, photonic crystals in animal coloring produce pure colors, such as blue, green, yellow or violet. Nevertheless, researchers at Fudan University in Shanghai have found that the brown in peacocks' feathers is indeed due to microscopic structure. The researchers' experiments and analysis show that peacocks' brown microstructures are a good deal more complex than most natural photonic crystals.

Mimicking the photonic crystals in peacock tail feathers could lead to new ways to manipulate light in cutting edge optical instruments. In addition, the discovery points the way to new paints and coatings that are not susceptible to the chemical changes that can degrade pigments over time.

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