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**Analyzing the Nanostructure of a Peacock Feather Using Microscopy and Spectroscopy**

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Humans have been interested in colors since the dawn of time, and that is no different now. Our understanding of color has increased from learning how to harvest colors, to understanding how pigments work and how to create them. The next step is to study structural colors, colors produced by light interacting with bio-nanostructures. The blue and green iridescent colors with a metallic sheen that are found in nature are all products of structural coloration. One of the most beautiful displays of color is found in the eye of the feather of the *Pavo cristatus*, more commonly known as the peacock.

This paper analyzes the color producing mechanisms of the peacock feather using techniques in microscopy and spectroscopy. The spectrum reflected by the eye of the feather was tested at different incident angles and lighting scenarios to check for the existence of blue shift. The eye of the feather was also observed under a polarizing microscope to investigate the polarizing effects. Finally, the eye and the barbules were observed under a scanning electron microscope (SEM) with the attempt to determine the shape and nature of the nanostructures that generate the magnificent colors of the feather.