Study: Hair Fiber Analysis May Improve Hair Repair Products

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When you reach for a bottle of shampoo or conditioner, you may not think about the science behind these hair products. But many of the hair treatments that promise to improve how hair feels are based on scientific research.

In one recent study reported by physorg.com, chemists analyzed how hair fibers reacted with each other. They hope the findings, which were presented at the American Chemical Society, will lead to treatments better able to repair damaged hair.

“For the first time, we present an experimental setup that allows measuring the subtle forces, both physical and chemical, that arise when single hairs slide past each other or are pressed against each other,” said Eva Max, a doctoral student in chemistry at the University of Bayreuth in Germany.

For the study, researchers analyzed hair samples from volunteers who bleached their hair, ranging from light to dark blond in color, with a unique technological invention for hair fiber analysis.

Scientists mounted the hair fibers on the tip of an atomic force microscope. Then they measured the fibers’ interaction as they touched each other.

Researchers found that damage to the hair surface or cuticle caused the fibers to rub against each other, creating friction that made the hair feel rougher and more difficult to comb.

In addition, researchers found that the hair fibers also built up negative charges that caused repulsion between single hairs. This friction-producing reaction can cause combing difficulties too.

The value of studies like this is that they help develop a system that will allow scientists to see how different hair care products affect hair-to-hair interactions, Max said.

This type of research has lead to conditioners that contain active ingredients to smooth out the hair fiber. The positively charged polymers in their creamy formulas can neutralize negatively charged surfaces.

This new way of hair analysis will help hair care product developers make more reliable products

for damaged hair, researchers explained.

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