



Scanning Electron Microscopy

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Tradename: Active.Lite® Hair

Code: 22045

Test Request Form #: 1404

Test Performed:

Scanning Electron Microscopy (SEM)

Methods & Materials

This study was conducted by salon professionals using Sensationnel Bare & Natural Brazilian 100% Virgin Remi Unprocessed Human Hair (Hair Zone Moonachie, NJ). One swatch, left unaltered, was analyzed as the control. Two test swatches were bleached alone with Pravana bleach, one with 30V and the other with 40V. Once the bleach processed, the swatches were washed and blown dry. The two treated swatches were treated as follows; Bleach (30V) + 1/4oz. 10% solution of **Active.Lite® Hair** and Bleach (40V) + 1/4oz 10% solution of **Active Lite® Hair**. Once the bleach processed, the swatches were washed and blown dry.

Note: **Active.Lite® Hair** was not mixed with the dry powder bleach alone, the developer must be added and mixed to a “butter cream” consistency before adding **Active.Lite® Hair**.

Gaston College Textile Technology Center located in Belmont, North Carolina was asked to perform Scanning Electron Microscopy Imaging (SEM) on the five hair swatches provided by Active Concepts, LLC. Gaston College used a Zeiss DSM 962 to perform the test at 20.0kV using a magnification range from 50x-300x. This method utilizes an electron microscope that produces images a chemically treated hair by scanning the hair with a focused beam of electrons. These electrons interact with the atoms of the hair sample to provide images of the hairs surface topography and surface composition.

The sample identifications are listed below.

Parameter	Test Sample ID
Untreated Virgin	F081015-UV
Hair + Bleach (40V)	F081015-40V
Hair + Bleach (30V)	F081015-30V
Hair + Bleach (40V) + 10% Active.Lite® Hair	F081 015-40VA
Hair + Bleach (30V) + 10% Active.Lite® Hair	F081015-30VA

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Results

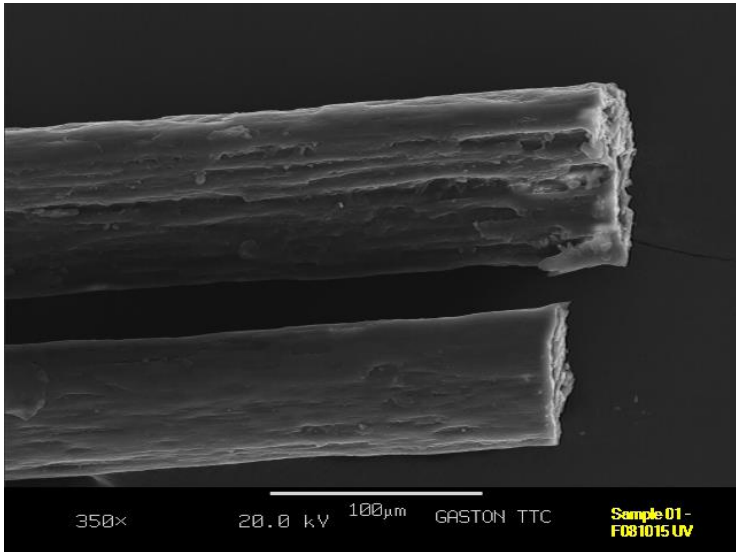


Figure 1. Untreated Virgin-F081015-UV

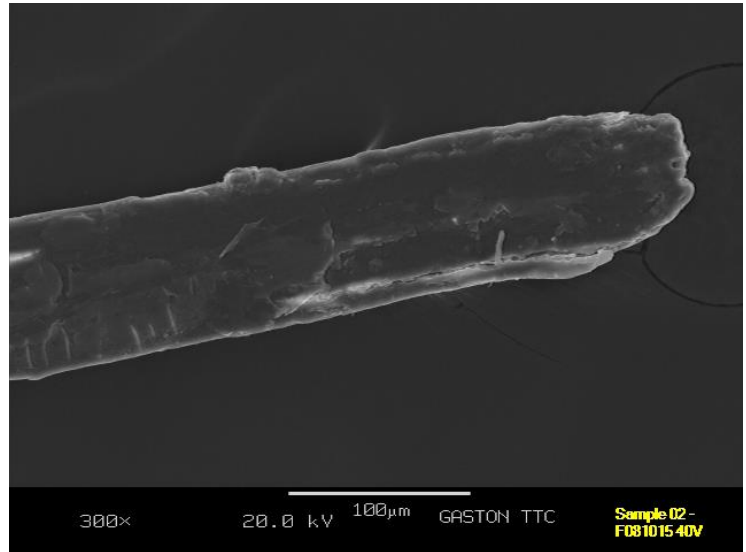


Figure 2. Hair + Bleach (40V)-F081015-40V

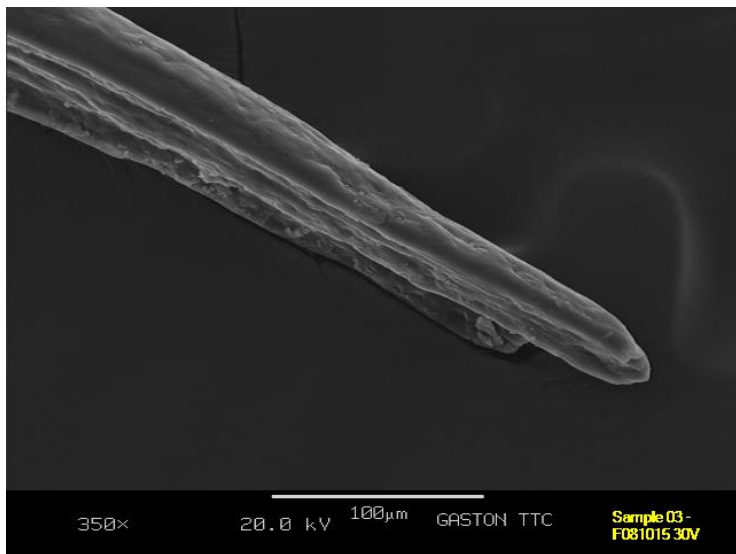
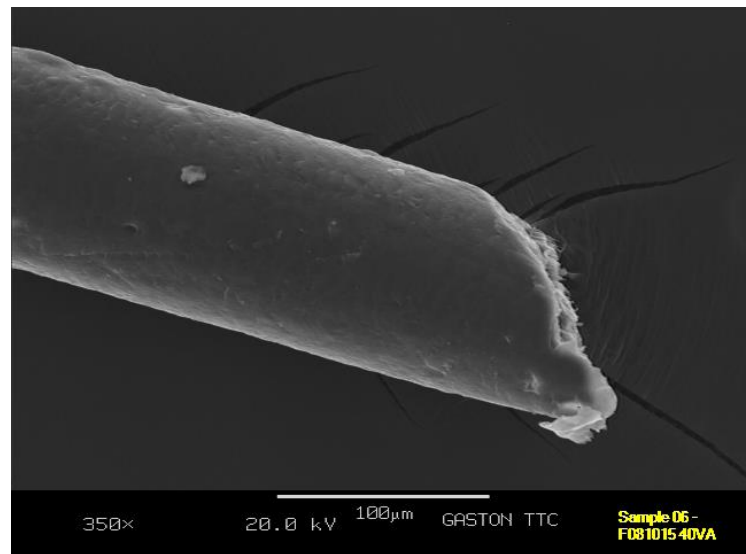


Figure 3. Hair + Bleach (30V)-F081015-30V



**Figure 4. Hair + Bleach (40V) +
10% Active.Lite® Hair-F081015-40VA**

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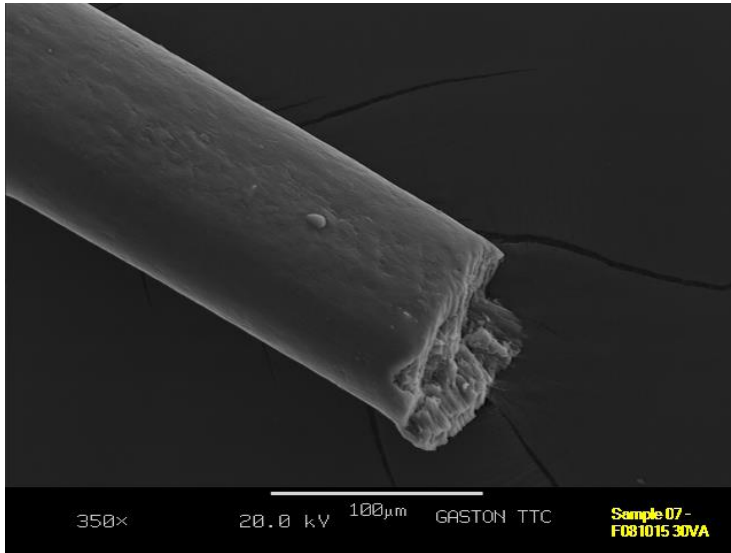


Figure 5. Hair + Bleach (30V) +
10% Active.Lite® Hair-F081015-30VA

Discussion

Standard Electron Microscopy (SEM) imaging shows high resolution images of the hair cuticles on each hair swatch. SEM images depict how the outermost layer of the hair, the cuticle, is effected by bleach treatments. The SEM imaging demonstrates that, untreated virgin hair is clearly already prone to damage from everyday aggressors, showing characteristic signs of breakdown, pre chemical treatment. The imagery results of bleached hair alone (both 30V and 40V) depict an extensively damaged cuticle. This type of damage leads to irregular growth, breakages, and overall unhealthy or dead appearance. At a singular level, one cuticle may not seem important, but these strand to strand imperfections contribute to a much bigger picture of unhealthy and unprotected hair. When the untreated images are compared to both the **Active.Lite® Hair** treated swatches, a significant decrease in damage of the cuticle is exhibited. The **Active.Lite® Hair** treated swatches display a smooth cuticle protected by the matrix style scaffolding for the promotion of healthy cuticles, added protection, and visibly healthier hair. It is this scaffolding and its semi-permeable membrane that promotes the exhibition of properties such as moisturization, pH balance, barrier protection, and additionally, protection from hair weakening after exposure to bleach rendering **Active.Lite® Hair** the ideal addition to any bleach treatment.