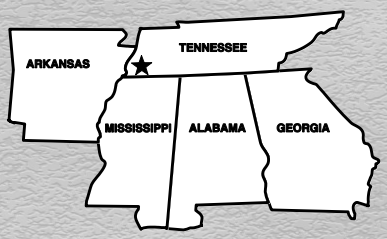
SCC
SOCIETY OF COSMETIC CHEMISTS

THE SOUTHEAST CHAPTER



Volume XXIX, Number 4 September 2016

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1-day CEP Course
"Botanicals & Natural Ingredients"
Instructor: Art Georgalas
Monday, September 19, 2016

Bayer Consumer Health
3030 Jackson Ave., Memphis, TN

8:30 am to 9:00 pm - Registration/light breakfast
11:00 am to 12:00 pm - Lunch (included)
3:30 pm conclusion of course

FREE for Southeast Chapter members
$50 other SCC members
$140 non-SCC member

RSVP by noon, September 14th to Cubie Lamb
(662) 890-2306 or e-mail: clamb@jstrickland.net

Inside this Issue…

Message from the Southeast Chapter Chair

The Southeast Chapter's Suppliers Social Event at the Stax Museum of American Soul Music in Memphis was absolutely wonderful. Memphis really is the home of many types of music. The museum has an authentic old church inside as an example of Soul music's roots in Southern Gospel. The costumes, posters, and pictures of the movement in the 70s were particularly interesting. We had a great dinner and as always it was great catching up with everyone. There have been and continue to be a lot of changes in the industry. It is good to see old friends come back working for a different company or in a new capacity at a merged organization. We continue to be grateful for the financial support we receive through donations from many companies that work in the Mid-South.

We have two chapter meetings left this year. Instead of having a dinner-presentation in Sept/October, this year in September we will have a CEP Course followed in November with the Officer Installation meeting. The CEP course in September is: "Botanicals and Natural Ingredients" Taught by: Art Georgalas

It is time to re-elect Southeast Chapter Officers for 2018. Positions available are Chapter Secretary, Treasurer Elect and Chair Elect. We would not have such an awesome chapter without good people willing to volunteer their time to serve the local SCC needs. Sad to say, the Bayer research center in Memphis which has provided a lot of the officer support for the Southeast Chapter over the years will be closing the end of October 2017. Thus it will be critical that the other chapter members become more involved such as the support that has been given during our March meetings in Chattanooga.

Looking forward to seeing you on September 19th at the CEP Course.
Please RSVP with Cubie Lamb our chapter Secretary, clamb@jstrickland.net.

Sincerely,
Stephen Baldwin, SCC Southeast Chapter Chair

Thanks to the Sponsors of the 2016 SCC Southeast Chapter Supplier's Social on June 22nd!

Cocktail Sponsor

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In October 2016, the Society of Cosmetic Chemists will host the 29th Congress of the International Federation of Societies of Cosmetic Chemists (IFSCC). This prestigious event will be held October 30 – November 2, 2016 at the Walt Disney World Resort's Dolphin Hotel in Orlando, Florida. Cosmetic Scientists presently representing the 47 Member Societies comprising the IFSCC will gather to discuss and advance the science and technology of our industry. The theme for the Congress is "Beyond Dreams into New Frontiers: Inspire, Imagine, Innovate". The 29th IFSCC Congress will provide the US industry an opportunity to exchange scientific knowledge on a global basis.

Visit the IFSCC Website to Learn More: **CLICK HERE**

Evolution of Bleach Protection

By: Hillary A. Phillis

Marketing Manager, Active Concepts LLC

Introduction

Identity or Accessory? Lucinda Ellery, hair specialist, wrote a feature article for The Huffington Post explaining that we view our hair as a "reflection of our identity."[1] But truly, our hair is both an accessory and part of our identity. It is simultaneously personal and public. Beauty, along with liberation and femininity, are social movements that track parallel to the trends in the hair care industry. Hair styles, and colors, are symbolic and iconic statements made throughout history.

In the quest for individual expression, hair is exposed to mechanical, thermal, and chemical stressors. Mechanical and thermal processes contribute to some hair damage. However, chemical treatments tend to push hair fibers to their limit. An impressive 75% of women color their hair and a growing percentage of men.[2] Blonde is the most coveted hair color giving bleach the strong hold on the market. Now, take a look at more recent hair color trends...vibrant magentas, pastel pinks, punchy purples, and lovely lavenders are dominating the media. The only way to achieve these new, popular hair colors is by first bleaching the hair, and then applying your color of desire...imagine the damage! Fortunately, technological advances in cosmetic chemistry have allowed for the creation of innovative products that are able to form a scaffolding around the hair shaft, protecting the hair during chemical processing.

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Structure of hair

The hair fiber consists of three main layers: medulla, cortex, and cuticle. The innermost layer, the medulla, is a thin core of transparent cells and air spaces. In some humans, the medulla has a distinct shape within the core of hair that can only be seen using highly magnified viewing methods. The cortex is the main body of the hair fiber and sits between the medulla and the cuticle. The cortex consists of long keratin filaments held together via disulfide and hydrogen bonds, where the melanin pigment is found. The cuticle, or outermost layer of the hair, protects the cortex and medulla. This protective layer is composed of overlapping, tightly packed, downward-facing scales. When in this position, the cuticle prevents moisture loss, while acting as the fiber's protective barrier.

All three layers comprise the shaft of the hair, the non-living portion that extends from the scalp, with the main constituent being the protein keratin. The keratin protein is compacted and cemented together to give a distinct shape to the hair strand. Keratin, by nature, is a sulfur-rich protein with strong disulfide bonds producing hair's resilience and strength. The hair shaft is strengthened by hydrogen bonds which are weaker, yet more numerous than disulfide bonds, and contribute to hair's flexibility.

The medulla and cortex contains the pigments known as melanins, specifically eumelanin and pheomelanin. Melanin is responsible for giving skin, eyes, and hair visible pigment. Eumelanin is responsible for dark brown shades while pheomelanin produces red pigmentation. Pigment ratios, or lack thereof, produce different shades of hair color. Complete loss of melanin produces white or gray hues, while low concentrations of both proteins result in naturally blonde hair. In order to alter the color of hair, the melanin within the hair fiber must be altered.

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Bleaching Process

Bleach is utilized in the lightening of locks to create the perfect creamy, platinum hue, or to prep the hair for additional color treatments.

Volumes of hydrogen peroxide ranging from ten to forty are used as developer in the bleaching process to deliver a range of desired results. Each volume has a specific hydrogen peroxide content ranging from 3% to 12%. The higher the volume the more oxygen that can be released in the hair shaft when applied. Therefore, the volume is selected specifically for the treatment or lift desired. The volume of hydrogen peroxide, also known as the developer, is added into the bleach powder or cream. The bleach powder or cream typically contain agents to speed up the process of bleaching the hair such as: ammonium persulfate, potassium persulfate, sodium persulfate, or a mixture of all three. The highly alkaline mixture of developer and bleach raises the cuticle of the hair fiber and allows hydrogen peroxide to penetrate the cortex, acting as the oxidizing agent. A series of irreversible oxidation reactions utilizing oxygen remove electrons from the melanin resulting in the well-known color change.

The melanin within the cortex remains present, but is rendered colorless through the reactions, producing the resulting blonde palette. The lighter or more lifted the hair, the more visible the pale yellow tint of keratin.

Hair is naturally proteinaceous containing a vast amount of oxidizable groups, not just melanin. When bleaching the hair, more than one type of bond and protein is affected, resulting in damaged, weakened hair. Hydrogen peroxide damages thioester bonds between cuticle cells, areas rich in amino acids, ionic bonds, and disulfide bonds in the cortical matrix. But the damage doesn't stop there, 18-methyl eicosanoic acid, a fatty acid found on the surface of the hair is degraded resulting in dry, brittle hair fibers. Additionally, during the chemical process the cuticle is raised, causing it to be porous, like a sponge. Just as sponges behave, the hair soaks up water quickly but it loses it just as fast. In conjunction with stressors, fibers receive no relief from the damage imposed.

As popular trends continue toward the extreme, repairing the structure and elasticity, particularly after bleach applications, is not only desired, but necessary.

Damage Prevention & Repair

The degree of damage inflicted during chemical processes rarely deters a consumer. Repair is often the afterthought resulting from chemical damage, when the excitement has worn off.

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Throughout the evolution of modern hair care, consumers have witnessed multiple iterations of hair repair options. Typical means of damage repair include; reparative shampoos, deep or leave in conditioners, treatments, hair masks, and most recently, hair oils. These current market offerings utilize a range of mechanisms, which stand on their predecessors to target both pre and post treatment repair.

Dating back to the early 1970's, dimer acid esters were utilized to pretreat the hair or to use concurrently with bleach to coat and protect adding an additional layer of protection from the harsh chemical treatment.[3] According to US Patent 4,067,345 Kelly, et al. hair treated with this protective organic compound was less susceptible to post bleach damage. Meanwhile, silicones gained popularity in the 70's, offering a multitude of varieties that have been and are still largely utilized in hair care. US Patent 8,740,995 Schweinsberg, et al. specifically discusses the pretreatment use of a 4-morpholinomethyl-substituted silicone which offers improved hair protection with no negative effect on the outcome of the oxidative treatment.[4] Silicones and synthetic copolymers characteristic barrier protection continues to be the main driving force in pre-bleach treatments.

Posttreatment repair offerings have also spanned the spectrum over the years. US Patent 5,136,093 Smith discusses quaternized panthenol as a remedy for post-bleached fibers in the early 90's via hair fiber penetration. Quaternized panthenol was claimed to penetrate the hair deeply to provide long lasting moisture control, reduce split ends, smooth the cuticle, and repair damage by chemical processes.[5] Posttreatment remedies typically take advantage of the damaged, ruptured cuticle to offer short term smoothing. US Patent 8,927,751 Moriya utilizes an organopolysiloxane with a specific organic group to smooth the cuticle and deliver enhanced combability properties to the damaged hair.[6] Additional mechanisms range from utilizing silicones, silicone copolymers, and silicone moieties to coat and protect from further damage, quaternary ammonia compounds to condition and rehydrate, and hydrolyzed proteins to strengthen and protect damaged locks. Anionic keratin sulfonates have also been used to condition and strengthen the hair by binding to the fiber post chemical treatment. Posttreatment mechanisms have evolved to a more recent technology: bond repair. US Patent 9,095,518 Pressly, et al. discusses the repair of the ruptured disulfide bonds within the hair. US Patent 9,326,926 Pressly, et al. utilizes polyfunctional compounds capable of forming ionic bonds to aid in repair to bring hair back to its pretreatment state.[7,8] Evolution of both pre and post treatments have resulted in a traceable timeline of innovation from dimer acid esters, silicone based mechanisms, to bond repair.

The personal care industry often seeks information from a multitude of other industries and vice versa. Currently within the chemical industry the pressure for greener product chemistry and the push to move away from petrochemicals and silicone based technologies has impacted the lines of innovation within the personal care raw materials industry. Just as the timeline of evolution is visible through bleach repair, the shift to accommodate consumer pressures will become evident in the coming years. As the market demands new, multifunctional mechanisms innovation must shift to accommodate.

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Leading edge technology indicates that mimicking bio-films formed by microorganisms could be the next step in chemical process protection. Synthetic biology is the re-design of existing, natural biological systems for other, useful purposes.[9] Through synthetic biology inspiration for natural product chemistry can be drawn. Specifically bio-films, unlike typical films, are polymeric chains forming a conglomeration of proteins, amino acids and polysaccharides that creates a complex, supportive interwoven matrix. A potential mechanism, US Patent Application 62/289,493, mimics the structure of bio-films, creating a supporting scaffolding matrix on the hair fiber while still allowing the bleach particles to penetrate the cortex and react. Innovative research, inspired by nature shows a supportive scaffolding matrix, derived from hydrolyzed pea protein & *Selaginella lepidophylla* extract, is a chemically resilient material that ionically binds to the hair's cuticle offering long-term protection from harsh hair color, free radicals, peroxides, and environmental stressors.

The three dimensional structure self-situates between the cuticle and the cortex where it self assembles to its supporting scaffolding with a semi-permeable membrane to reinforce and support the hair's structure. This support allows for minimal damage to the fiber during the harsh chemical process. Concurrently, the product seals the cuticle to lock in moisture and prevent further damage. The concept of prevention via support with simultaneous long term sealing of the cuticle is the leading edge of next generation hair care.

In a world where more is more, combining prevention and repair is the next logical step to allow trends like bright purple locks to become attainable without the excess damage. An engineered plant-based hybrid biopolymer utilizing poly-compound reactions brings the idea of a multi-step and multi-level web of protection to life in the next iteration of consumer inspired hair care technology.

References:

1- Ellery, Lucinda. Hair and History: Why Hair is Important to Women. *Huffington Post.* 07 Sept 2014. Web. 20 June 2016.

2- Sherrow V. *Encyclopedia of Hair: A Cultural History*. Westport, CT: Greenwood Press; 2006.

3- Kelly et al. US Patent 4,067,345, 1970

4- Schweinsberg. US Patent 8,740,995, 2013

5- Smith. US Patent 5,136,093, 1991

6- Moriya. US Patent 8,927,751, 2011

7- Pressly et al. US Patent 9,095,518, 2012

8- Pressly et al. US Patent 9,326,926, 2014

9- Synthetic Biology. Web. 25 July 2016

THE SOCIETY HAS A NEW LOOK

SOCIETY OF COSMETIC CHEMISTS

New York, NY – The Society of Cosmetic Chemists (SCC) unveiled its new logo at the "Naturally Kiawah Symposium" held last week by the SCC Carolina Chapter on Kiawah Island, SC.

"The launch of our new brand logo kicks-off a new era of the SCC that speaks to who we are as an organization and that we are a direct reflection of the strong community of dedicated members we've been serving for over 70 years – multidisciplinary, dynamic, modern and sustainable," said Debbie Pierce, SCC President.

The SCC worked with the design firm Strong Studio, based in New York City, to create its new logo. Following an intensive process which began in 2015 and included information gathering about the SCC, researching the landscape both in terms of other non-profits and industry organizations serving the cosmetics and personal care space, a logo was selected which both recognizes the history of the Society in advancing cosmetic science education while at the same time creating a look and feel that is modern and forward-looking.

"Strong Studio's goal in redesigning the SCC logo was to give SCC a modern brand identity that spoke to the organization's position as a trusted source for the cosmetics and personal care community," noted Matthew Strong, Principal and Creative Director. *"The previous SCC logo was nondescript so redesigning the brand to have a distinctive personality was essential."*

In the new logo, the hexagon icon is inspired by the structural formula of organic compounds. Comprised of equal, balanced sides, the two "Cs" from Cosmetic and Chemists come together to create the "S" of Society in the negative space, representing multiple disciplines working together to make a greater whole. With the "S" in the middle, the Society becomes the bridge between cosmetics and science.

"We are proud of our history," David Smith, SCC Executive Director added. *"This new logo shows the pride in that history and also the excitement for our future as we embark on our next 70 years. The structural formula icon, the way the 'C's create the 'S' of a greater Society, the green color denoting sustainability…this logo marks an exciting new day."*

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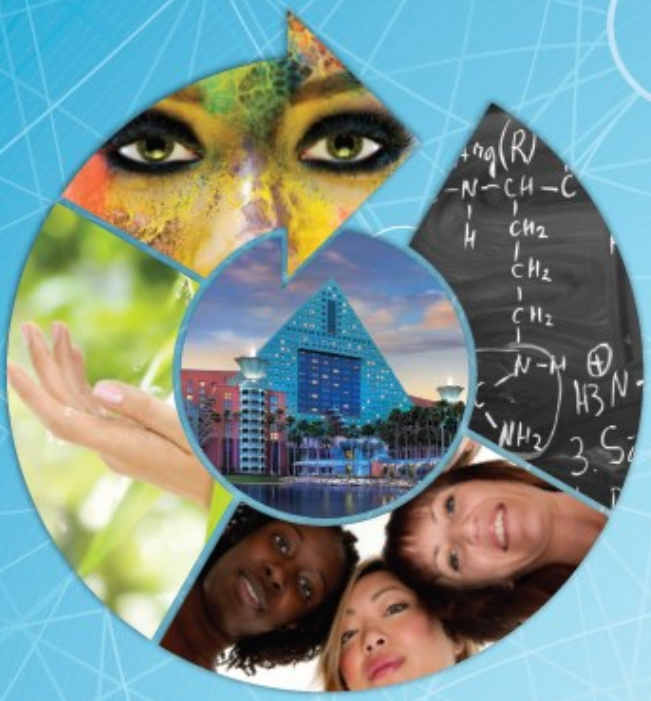

29TH IFSCC CONGRESS

8 KEYNOTES

74 PODIUM PRESENTATIONS

350 POSTER PRESENTATIONS

2-DAY EXHIBITION

REGISTER TODAY AND JOIN US AS WE GO

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