Trey McDonald: Good morning and afternoon, and thank you all for joining us today. Today's webinar, Color Care Formulation Guide, is brought to you by BASF. Your presenter today is Stephanie Biagini. Stephanie is currently a cosmetic chemist within the Application Technology Team from North America, and is in charge of all Color Care formulations and sales support. Stephanie has a [inaudible] BS in chemistry and an MS in cosmetic science from Fairleigh Dickinson University. She is presently working toward her MBA at Fordham University. Trey McDonald with UL and I'll be moderating today's event. Please submit your questions by typing them in the question box located on your screen. Our panelists will answer them at the end of the presentation. We are recording today's event and will send you a link by email when it has been posted to ulprospector.com. Now I'd like to turn the presentation over to Stephanie. Stephanie?

Stephanie Biagini: Good afternoon, everyone. As mentioned, I'm Stephanie Biagini, a cosmetic chemist within the Personal Care Division at BASF. Today, we're gonna go through BASF Care Chemicals Color Formulation Guide. Our agenda for today is as follows: first, we're going to go through the attributes of color products, then we'll do a what's in the bottle. This is our breakdown of what average formulations look like across all product types and color. We'll move into ingredients and examples of BASF ingredients that can help you with your formulations, and end with trouble-shooting situations that can sometimes come up while formulating.

These are the types of color chart product forms that you'll find. As you can see, [00:01:35] it covers a wide range of products, from your standard emulsions, to aqueous, to loose and pressed powders, and finally anhydrous systems both solid, meaning sticks and balms, and semi-solids, your glosses and mousses. The consumer expected attributes of these products are the first thing a formulator needs to think of when creating new formulas.

The first type of formulas we'll cover are lip products. As you can see, [00:02:00] they need to cover a wide range of colors, have to have an attractive appearance. They have to be free from defects, easy to apply, and non-irritating and safe. What you'll even notice in the next three slides is that these five attributes actually run across all product categories. Beyond that, lipsticks must be comfortable, moist, and conditioning, since these are qualities most women want out of a lip product. They also need to resist feathering, meaning when a woman applies it, it cannot move after application, non-staining if the product isn't the same, and also, due to the place that the product is applied, it needs to have a pleasant scent and taste. Finally, they should be stable and not sweat, flake, cake, soften, harden, etc.

For eye products, you can see [00:02:45] the top five attributes repeat. Beyond the basics, eye products must have reasonable wear and removal properties, as well as high levels of pigmentation. Most importantly, they should not crease, flake, or cake.

Again, for mascaras, we see [00:03:00] the repetition at the top. Mascaras, like other eye products, need to have reasonable wear and removal, as well as high levels of pigmentation. Specific to mascaras, the consumer is looking for no caking on application, or flaking on drying. Thickening, lengthening, smudge-proof, long-lasting, volumizing, non-clumping are also all very important to mascaras.

Lastly, for foundations, we again see [00:03:20] the top five attributes. Foundations explicitly need to provide different levels of pigmentation suite to the customer needs for coverage, sheer to medium to full. Also, because women usually apply these covers once and wear all day, it needs to have long-lasting wear, but also be comfortable.

Next, we'll move into our what's in the bottle. This is a very generic and basic overview of the types of materials you'll find in certain formulation types. Also, for your reference, we've included some BASF materials that fit the categories.

Here is a generic stick formulation, or solid anhydrous. As you can see, [00:04:00] emollients and waxes make up the majority of this system. Powders and fillers can be added for texture and oil absorption, while color additives and effect pigments will comprise your color. Oil-soluble polymers can be added for shine and wear, UV stabilizers for color stabilization, and actives and other miscellaneous products also to comprise this product.

Here is a generic flow-able anhydrous formula. These can be lip glosses, some foundations, and even mascaras. as you can see, [00:04:30] emollients and waxes make up the majority of this system, as in solid anhydrous sticks, but with more emollients than the previous. Powders and fillers can be added for texture and oil absorption, while color additives and effect pigments will again comprise your color. Oil-soluble polymers can be added for shine and wear, and UV stabilizers for color stabilization.

Here, you'll see [00:04:50] a generic powder system. As you can already tell, the breakdown of a formula like this is a little different than other formulas. Powders and fillers obviously make up the bulk of this product. But beyond that, and color additives and effect pigments to create color, your formula is broken out into dry binders and wet binders. Your dry binders are fatty acids, metal soaps, and inorganic salts, while your wet binders will be your emollients, polymers, waxes, and consistency factors.

This [00:05:22] is an example of an oil and water emulsion. It's important to note the addition of emulsifiers

within the list of ingredient categories. They are important here to create a system that stays together. You'll also see the same example categories as we saw in the previous products.
This is a water and oil emulsion. A little different, again, addition of emulsifiers within the list of ingredient categories. However, be aware that the emulsifiers needed here are different than those needed in oil and water. This is because you want your oil base to remain your external base. Because there are both water base and oil base in the ingredients, you can use the other ingredients that are soluble in either. Also, uses for emollients can increase in a formulation like this one, and you can use less water.
Something I briefly wanna touch on is the preparation of traditional emulsions versus the preparation of color emulsions. It is important to note that in traditional emulsions, it's a very relatively simple step. Adding your oil and water together at a similar temperature, marginization, and dropping your batch.
Here [00:06:35] is where things differ slightly. In a color emulsion, you need to mill in your color, and color match prior to emulsification. This can get tricky. For proper dispersion of pigments, it's necessary to keep milling throughout the process.
Next on the list, we're going to go into some ingredients that you'll find in color care formulations.
Here's [00:07:00] a list of some BASF technologies. As you can see, we cover a wide range of product forms, from UV filters all the way down to active ingredients.
These [00:07:10] are the commonly used color care ingredients. First, we'll start with color actives, and end with UV stabilizers.
Types of color additives you can add are dyes and lakes, which are synthetic organic colorants, you can add true pigments, which are inorganic colorants or natural colorants, and effect pigments, which are virtually composite pigments. Colors are classified as organic or inorganic, and lakes are water-soluble dyes put onto insoluble substrates, and dyes are simply soluble in water.
Common color additives for emulsions are very specific. For mascara, you will use D and C black number two, also known as carbon black, and black iron oxides. You can also use FD and C yellow five, blue one, ferric ammonium ferrocyanide, ultramarine blue, chromium hydroxide green, or manganese violet for those real bright mascaras. For foundations, since the shades of the products are skin tone, most of the color additives are predominantly inorganic. You're gonna see your iron oxides, from red to yellow to black, your titanium dioxide, and your zinc oxide, depending on the shade that you're making.
Something important to note when adding colorants to products is dispersing colorants into grinds. Very often for anhydrous systems, you'll colorants into grinds prior to adding them into your batch. This helps because it provides a smaller particle size, which leads to higher color strength, and increase of the maximum visible surface area. You get maximum opacity, smoothness, and your pigments are more likely to stay suspended. Two problems you can run into here are if your pigment particles are milled too small, your visible color can actually totally disappear, or you can have pigment re-agglomeration. And if your pigment particles are not fully developed, your shade may continue to develop, and it could feel gritty on application.
Effect pigments, one of BASF's specialties, can be utilized up to 80%. They're easily dispersed, and they can also be surface treated. Might want to surface treat them to prevent phase migration, improve pigment wetting and dispersion, improve adhesion to desired area, enhance feel, application, and performance. For maximum impact, my suggestion is to maintain particle size for more reflectance, to avoid grinding or excessive shear, and add your effect pigment near the end pf your batch process, after shear has been applied.
These [00:09:50] are the pigment types we have at BASF. First on the list is your interference pigments. These appear white, but have a flash of color. You have metallic pigments that come in bronze, golds, russets. Your color variable pigments, which look different colors at different specular angles. You have absorption pigments, where a absorption color is deposited onto your substrate for your effect pigment. Then you have blackened pigments, which are pigments that contain a small amount of black iron oxides to get a deeper color.
The effect pigment structure is relatively simple. It contains a substrate, and the substrates need to have high aspect ratio and have high specular reflectivity and little scattering. Common substrates are mica, borosilicate, fluorophlogopite, and alumina. The coating needs to be high refractive index material to have good reflectivity. Common coatings are titanium dioxide and iron oxides. Within the coating layer, you can add additional layers to influence your properties. Absorption colors are added here for color strength, and you can even add silicone dioxide layer as a spacer between your layers to increase chromaticity.
This is an example of an effect pigment. This is our Cellini Red. This is an absorption effect pigment on natural mica. It's D and C red seven and, as you can see, [00:11:20] as you look at it from different specular angles, it kind of shows different flashes of color.
Next on the list, we have our Reflecks MultiDimensions Changing Cherry. As you can see, [00:11:30] right up here in the black, you can see it move from gold to pink. This is one of our color variable pigments. It's a large particle size glass pigment.
Next, we have our Chione Digital Pink. As you can see, [00:11:45] if you look down here at the white, it's

white and shows no color. Then the black, at a certain specular angle,you can see a flash of pink.
Next is the Flamenco Super Red, very similar to the Chione Digital Pink except this is on natural mica, while the other one was on synthetic mica. As you can see again, [00:12:05] because it's an interference pigment, the bulk powder is white, as you can see here on the bottom, but you get a flash of red at the top at a certain angle.
Something important to note is the particle size impacts that your effect pigments can have on formula. Different particle sizes give different effects, from satin to glittering. For satin, less than 20 microns, shimmer, 20 to 45, sparkle, 45 to 80, and glittering, above 80.
This is an example of some of our products dispersed and how different they are, from Timica Soft Luster White all the way up to Reflecks Dimensions Glittering White. You can see different coverages, and different light reflectivity due to particle sizes.
Mixing pigments of different colors and particle sizes together is important. This can give you depth in your formula. Mixing interference pigments of similar sizes up to about 50 microns will actually produce a white out effect, similar to how pixels work on a tv, which are indicated in the picture below. [00:13:20] This is called additive mixing. Larger particle sizes, however, don't do this as they're visible to the naked eye and can be perceived as individual pinpoints of color.
This is a short video of pigment layering. Here you see [00:13:40] an oil-based system. This is a large particle size Reflecks that's going in first. As you can see, [00:13:50] it creates nice shine to the batch, but what we wanna do is create an entire color system that really pops. So next, I'm going to be adding a black Timica terra[SP] pigment to give a background, and as you can see, [00:14:05] you start to see striations in the white pigment. After this, after you have this base ready, you can add more pigments to alter your color. This is a very small particle size interference pigment. It's our Chione HD Gold. This is going to alter the color of my base. Small particle size pigments impart a wash-up color, so as you see, [00:14:40] the base is getting lighter and lighter as this mixes in. Next, I'm going to start adding reds to increase depth in my color. This is our Cloisonne Red. It is a medium particle size on natural mica. It has a metallic finish, as you can see [00:15:00] in the batch as it's mixing. And now I'm actually going to add a bright pop of color with our Cellini Red, which you saw on the first draw-down we looked at. That's going to brighten up the whole system. It's an absorption pigment on natural mica. As you can see, [00:15:20] you see the striations, you can see the interference pigments, that flash of blue that you're seeing, and that's how you create depth in your color.
Substrate impacts are also important to note when working with effect pigments. You have texture effects and visual effects. Your texture effects will actually deal with oil absorption. The more or less a pigment absorbs oil will impact your product. Mica has very noticeable oil absorption when you add it into a batch, and as you move to synthetic mica, bismuth oxychloride, and and borosilicate glass, you get less and less oil absorption until you have virtually no oil absorption from your borosilicates. Your different substrates also have different visual properties. Synthetic mica, due to the clarity of the substrate, has very clean colors, and borosilicate, due to the smoothness of the substrate and the ease of coating, has very shiny, bright colors.
Specialty performance materials also fall under the category of effect pigments. We call them performance materials because they impart specific things into your formula without necessarily impacting color. They're a family of mineral products that can give certain consistencies that you're looking for. They are optically neutral with very soft luster and sheen. Three examples are Chione M SVA, this is our Lauroyl Lysine coated synthetic mica. We have Mearlmica and Mearlmica SVA, which one is just a natural mica and one is Lauroyl Lysine coated natural mica. And then we have Bi-Lite 20, which is our mica and bismuth oxychloride.
Chione M SVA is a great example of something that you can use across all color products because it's very clean and has white color and high purity, due to its synthetic mica base. It has high oil absorption, and is extremely small particle size. Recommended dosage here is greater than or equal to about 10%. You can use it as a filler and texture modifier within lipsticks, lip glosses, eye shadows, and emulsions.
The next type of ingredients we're going to talk about are emollients. Emollients are important for pigment wetting and viscosity. They adjust consistency and the appearance of your formulation, as well as application. They can add in the adhesion of pigments, solubilized dyes, be a solvent for waxes, they can affect odor and taste, and they give you that moisturizing feel that we spoke about in the attributes that were necessary for a consumer in a lip product. Examples of this are castor oil, to lanolin, to squalane.
BASF emollients are things like Cetiol Sensoft, Luvitol Lite, Cetiol Ultimate.
Emollient choice is important on pigment dispersion which we spoke about when we talked about turning pigments into grinds.These are examples of titanium dioxide mixed with certain oils. As you can see, [00:18:20] our Myritol 331 is excellent at creating a homogeneous dispersion. Our Cetiol B and Cetiol CC are very good, and they way outweigh cyclomethicone and mineral oil for dispersion such as this.
Cetiol Sensoft, as I mentioned before, is a great emollient for color care. It has a very luxurious feeling and a velvety sensation. It has extremely high spreading which aids in its ease of application that we look for in

color care products. It supports dispersion of UV filters and enhances the solubility of UV filters, and it has excellent emulsification properties.

Cetiol Ultimate is another example of a great emollient that we have. It is ultra-light, non-polar. It's volatile, so it's extremely fast-drying, imparts smoothness, and its volatility actually lends to greater pigment adhesion.

Cetiol SB 45 is one of our shea butters. It helps with gloss enhancement when in sticks and balms. It also aids in spread-ability. The on-ball[SP] of this is actually it adds a little bit of a cushion factor to a lot of pressed powder and powder type eye shadows. It has excellent odor and color, and soothing properties which are important.

This [00:19:35] is an example of a spreading cascade. First, you'll have your very fast-spreading emollients: Cetiol CC, Cetiol Sensoft that we just spoke about. This is also where your cyclomethicone would live, very fast-spreading. Next thing you have is slow-spreading type emollients. These are Cetiol E, Cegesoft type products. This is also where our SB 45 lives. In the middle, you have your medium-spreading emollients like Cetiol S, Eutanol G. And what you do when you combine all these together, you create a spreading cascade. What's important to know about a spreading cascade is it's easy to manipulate. If you use spreading cascade in a formula and you wanna alter the texture slightly, all you have to do is bring up one of these types of spreads and you'll get a different texture.

This [00:20:30] is an example of something like that. When adding Cetiol C five which is fast-spreading, to J 600 which is slow-spreading, and Myritol 312 which is medium-spreading, you get a nice mixture similar to castor oil. Now, if you wanted to put this in a lipstick, and alter that lipstick in the future, all you would have to do instead of searching out an entire ingredient, change your label copy, things like that, all you would have to do is increase one of these slightly, and you're going to get a different shift in your spreading cascade.

Polymers are important for color care. They impart shine, long wear for film forming polymers, structure for thickening polymers. They have optical enhanced texture effects. Our examples of this are natural gums, carbomers, acrylates, and PVPs.

BASF, these [00:21:20] are three film formers that are really suitable for use in color care. Luviset Clear AT two, Luviquat Supreme AT one, and Cosmedia DC.

I really wanna talk about Cosmedia DC here. It's an oil-soluble film former and it aids in the adhesion of pigments, and increase wearability of color products. What's great about it it that even up to 10%, it does not impact your aesthetic property, it adds to water resistance, and provides a transparent film. It'll also aid in gloss.

BASF has a lot of thickeners. These [00:21:53] are some examples of thickeners that we use. Two thickeners I'd like to speak about are Cosmedia SP and Luvigel Star.

Luvigel Star is an associative thickener, which is a superstructure of connected micelles. It has a high salt tolerance and is stable upon pH change. However, the viscosity is dependent on the temperature. Cosmedia SP is a thickener based on osmotic swelling. It has a network based on hydrogen bonding, and it has no or low salt tolerance, but that's not quite so important for color care. What's great is it has low viscosity dependence on temperature.

This is a write-up on Cosmedia SP. What's great about this and what I wanna point out is how it improves cushion is cold process formulations. It's also great for use at low concentrations.

Luvigel Star has an excellent sensory profile for high pigment loading in color care products, which is always a battle when you're formulating. Everyone wants a lot of coverage, a lot of color, a lot of things, but it's hard to have all that without impacting your formula. Luvigel Star helps in overloading formulas with tons of color whether it be emulsions or lip products.

The next thing I wanna talk about is waxes. I'm gonna include consistency factors here that BASF carries because they do the same thing in color care. You use them to optimize melt points, impart hardness and gloss, they can thicken oils or esters and other liquids that your adding to the mixtures, and they actually provide satisfactory molding properties. Obviously, this is super important when you're talking about lipsticks. Examples are: Beeswax, Carnauba, Candelilla, Ozokerite, Paraffin, Lanette O, Cetiol Myristol Myristate.

BASF consistency factors live in the Cegesoft or Cutina range of our names. One important consistency factor I'd like to talk about is Cegesoft VP. It has consistency and melting behavior close to petrolatum and it's great basis for stick preparations. Another one is Cutina HR Powder. It's crystallization behavior has a positive impact on stability and viscosity, whether you're talking about solid anhydrous products and sticks, glosses, it even helps in emulsions.

I've got our Cosmedia Gel CC here under consistency factors because, although it's really in a lot of emulsions to thicken your water base. I actually find, for color care, it serves best to help stabilize anhydrous products. Beyond that, it also helps as a smoothing agent, it has a melting texture with a velvety matte finish

that really adds another layer of complexity to the texture of very simple wax-based sticks and powder-based eye shadows.
Emulsifiers obviously are very important for our emulsification process, as they help stabilize what is usually a very unstable mixture. They have a hydrophilic part and a lipophilic part.
BASF emulsifiers that I readily use in color care are: Eumulgin SG, Eumalgade PL 68/50, Dehymuls PGPH, and Lameform TGI, although the last two I don't necessarily use them in the way that you would think.
The Eumulgin SG is a strong oil water emulsifier at low concentration. It's a great for all face care products, sun care products, and color care products. It has high flexibility in formulations, and supports the formation of lamellar gels which help increase stability.
The Eumalgade PL 68/50 also builds lamellar creams. It's very mild, and it's super suitable for modern, light, natural emulsion concepts that you're seeing on the market now, this no makeup makeup melting into your skin, barely there. This is the type of emulsifier you wanna use for that type of cream.
Dehymuls PGPH can be a water and oil or oil and water emulsifier. It's great for lotions and creams, but what really drives it home for color care is it actually improves adhesion and shine in color formulations. And due to this fact that it has excellent skin compatibility, it really serves as a great use for all those types of attributes that we hit on in the first slides: moisturization, shine, imparting color. This is really a great go-to and, you know, you wouldn't usually think to use something like this as your traditionally use an emulsifier, but it can be added as a pseudo-emollient for the types of creams that you need.
UV stabilizers are obviously very important in color care, more so I think than any other category. They help minimize color fading, product yellowing, any viscosity changes they can even help with, oxidation or olfactory problems, and some fatty materials.
These are the good solutions BASF offers for color stability. UV stabilizer, we offer Tinogard TL. It's soluble in oil and absorbs harmful UV light. We also have Tonigard Q, which really steps up color stability. It's an excited state quencher, and it takes the energy from excited molecules that would otherwise degrade and absorbs it, so they don't do that within your formula. Our antioxidant is also wonderful. The Tinogard TT is our substitute for BHT.
The last thing we're going to cover is trouble-shooting and formulation tips. These are some things that formulators can run into on a regular basis, and some very basic tests to can help combat some of the problems that can arise.
First thing I wanna talk about is anhydrous systems problem solving. There are four in this category that I think are worth mentioning. First is eliminating pinholes. To the right, you can see [00:28:10] a lipstick and the dark marks that you're seeing there, right in here, are actual pinholes. This is due to too much air in the product when you're molding. So, one easy way to solve this is pull vacuum on your batch to get rid of the air. if you don't have a vacuum, you can reduce your mixing speed when you're making your batch. Usually you hear this wa-wa-wa sound when you're mixing. What you want to do is not hear that sound. You want to creat a vortex that's low enough in your batch for good pigment dispersion, but not so low that you hear this kind of wa-wa sound while you're mixing. That's an indication that you are adding air into your batch.
The next thing you run into with lipsticks is mainly feathering. This is color migration. This is usually due to excess oil and emollients and not enough things that really are gonna make your formulas thick. The reduction of those emollients , and even adding a powder, one of our effect pigments, one of our performance materials, to absorb some of that excess oil is going to help you here.
Syneresis is also a problem, this is sweating. It is an indication of formula instability. It's an imbalance mainly of emollients and waxes. It could also be not enough colorant load in terms of powders, like not enough solids in your product. You can reduce those emollients, you can increase the waxes, increase the powder again. Something I really like here is to add a small amount of a high-melt-point wax. Polyethylene, high-melt paraffin waxes work great here.
When you're making a lipstick and you're molding a lipstick, very often as it's setting up within your mold, you have this gradient where a lot of your high-melt-point waxes actually migrate to the outside of your stick. Because of this, if you add a small amount of high-melt-point wax into a lipstick, you can combat some of this sweating by creating that shell to protect the stick without losing the moisturization and that core that provides all the attributes that a consumer would want.
The last problem is problems with your package. Sometimes, you have a stick and it's not fitting in your package correctly. This is usually due to the wrong mold. Sometimes it can even be caused by pouring, dropping your temperature at too high of a temperature, so it's too hard. It could also be cause by the exact opposite way, dropping your temperature at too low of a temperature, so it's too soft. Modifying your ratios of waxes could help, but sometimes playing around with the correct drop temperature for the formula you've created is your best bet in combatting this type of problem.
Next on the list, we have the powder system problem solvings that, you know, I wanted to speak about. The first one worth speaking about is cracking and chipping. This is the first picture you see. [00:31:05] This is when you drop a powder and it starts to crack, it's showing instability. This is usually not enough liquid

binder. It could be that it's not pressed hard enough, but mainly it's a matter of your liquid binder that helps keep this all together.
The next thing I wanna speak about is glazing, which you see in the picture next to it. [00:31:30] This is when there's too much liquid binder or wet ingredients. What happens is, when you start rubbing the powder, you get this almost hard shell on the outside of the powder, and you can't pick up any of your product. You can remove some of your liquid binder, you can actually add dry binder to help combat this, to help break up that without losing your stability.
And then pay off, too much or too little. This is due to wrong ratios, but I've found very often that the correct pressed really can impact this. And if you know what you want your pay off to be, and you know what the applicator you're using is, sometimes just playing around with your pressing ratios to see, okay, how much am I picking up with this type of press? If I press it harder, am I gonna get less product? Is it not enough product now? And playing around with that is very important.
Last thing I wanted to talk about was mascara problem solving. Problems that come up with mascara is this tackiness, flakiness problem, and both are due to incorrect dry time. It affects how the product sets on the lashes, whether it doesn't set fast enough, and you get this tackiness, this kinda sticking as you're blinking. Or, if it dries too fast, and you get this flaking because you don't have the correct film on your lashes, and suddenly you're constantly wiping under your eyes, you're running into all sorts of problems like that, which no one wants. Controlling the levels and the types of emollients you use can combat this. Possibly using a mixture of volatile and non-volatile emollients is really your solution here. You want your mascara to dry fast, you don't want it to dry too fast. You also don't want it to not dry at all.
Color impact is important in mascara. D and C Black two is expensive, it's carbon black and pretty difficult to use due to some of the hazards. Unfortunately, black iron oxide is just not black enough for that jet color that many consumers want. Solution here is a way of having the best of both worlds, jetness and economical formula, is to use both of them. You know, use black iron oxide as the basis of your color, and add just enough of that carbon black to increase your black color.
Lastly, viscosity is an issue, especially in emulsion type formulas for mascaras where your oil is your external phase, and you have a lot of waxes and a lot of oils. The viscosity will not work in the package, maybe it'll change over time. Sometimes this is due to wax crystallization, and sometimes it 's just the loss of solvent over the course of time. The best way to fix this is to make sure you have just enough wax to thicken your formula and use a thickener in your water phase to help, but not any more than you absolutely need. And then also, this also has to do with process. The higher shear you apply during critical times, the more likely you're gonna build viscosity and have a problem later on.
These [00:34:30] are some references that I use. The books here are great, large, huge books that have tons of different information. The most recent mascara article written in Cosmetics and Toiletries by Tsolis and Camacho is fantastic. There are also some older references that haven't changed. I mean, a lipstick is a lipstick is a lipstick. I highly suggest you check these out.
You know, and this is the time I'm gonna open it up for questions. If there's anything that you guys have, let's check it out.

Trey McDonald: And then Stephanie goes ahead and actually takes a look at those questions. Again, we've had a ton of great questions already come in, so please do send us your questions by typing them in the question box located on your screen. We do have some great technical experts with BASF here, so please do send us your questions, we'd love to hear from you guys.

Stephanie Biagini: Okay, I have a question here. It is, "What advice do you have for someone who's just getting started with formulating?" Wow, welcome. It's an interesting and fun thing to do. From our panel here, we have a really great suggestion, and one of the things that you can do is look at things that are already out there. Published formulas from companies like BASF that exist on ulprospector, your Cosmetics and Toiletries magazine. The Society of Cosmetic Chemists offer a lot of great reference material for chemists just starting out, so you can get your feet wet. Very often, and I know with our formulas, we write why we put a specific ingredient there. What are we using it for? They give you a process, it's a great reference for use. But beyond that, my suggestion would be just get out there, mix, pour, see what you come up with. Sometimes the best things, you know, you just happen upon when you were trying to do something else.
A next question I have is, "What effect pigments can be used for UV formulations?" This is something that we struggle with across the entire industry, because of colors, by nature, are reactive, that's why they give you such great colors. They are also sometimes unstable. Two specific colors that we would suggest maybe avoiding would be iron blue or carmine. These are extremely reactive to UV light, and ultimately at the end of the day, you have to think about what kind of effect you want. If you want to use this for a UV formula, are

you looking for a satining, shimmering, glittering? What is your end result? I would say that maybe particle size is going to impact here, how much you're using. But beyond that, I think that you really just have to be super careful about the colors that are very reactive to UV light.

"How do you go about improving the sensory attributes, such as skin after-feel of the long wear products, and improve comfort?" Yeah, you and me both, pal. This one's hard. We talked about in the presentation a sensory profile, a spreading cascade as such that is going to help with your skin feel on application and your after-feel. That's what the whole spreading cascade is about. It's instant smoothness as soon as you apply with a fast-spreading emollient, and then a long, you know after-feel as you continue on. My suggestion would be to use more heavy emollients if you're looking for long wear, to enhance long wear. But really what's going to help the sensory attributes of long wear products is the type of film formers you're using. How comfortable are those film formers? Are they impacting the texture of your product? We talked about Cosmedia DC as an excellent film former that up to 10% will increase wear and not impact your formula. There are other water-soluble film formers that do just that, that impart smoothness. Luviset Clear AT two does that as well. So my suggestion is, would be to do some experiments with different types of formulas , that maybe are marketed to specifically say, "Okay hey, this is gonna increase your wear, but it's not gonna impact your sensory attributes." And, you know, go from there.

Hey guys, sorry, we're just going through some of the questions. Gimme a few minutes, and we'll get back to you in two seconds.

So we have a question and it says, "As you know, healthy glow and radiance are highly desired in skin care products." Very true. "What special effect pigments or light diffusers do you recommend to achieve this face cream?" Excellent question. First thing, light diffusers are not actually gonna provide a glow, luminosity, or radiance. What they will provide is maybe some soft focus effects, but not necessarily exactly what you're looking for. You can get long term radiance with some of our actives, and you can follow that for immediate radiance with a very small particle size effect pigment. Something like our Flamenco Gold would work well, our Chione HD Gold which is extremely small, I think 11 microns, so very tiny. Interference pigment that won't necessarily impart a ton of color, just enough to give you that immediate impact that you're looking for. There are other things that you can use. You can use certain colors to combat other colors. Violet, for example, will decrease a sallow, yellow look. So, our Chione HD Violet would be an excellent option there. Greens can combat redness, so our Chione HD Mint Green at a small percentage in a product can actually combat some of that redness.

All right, so we have a question about suggestions for books and articles related to the Introduction to Color Technology: Pigmentation and Cosmetics. You'll get the slide that has the references on it that I provided. The two books and two articles that I provided there are excellent. My other suggestion would be that there are courses offered by the Society of Cosmetic Chemists very regularly on all sorts of cosmetic formulations, from sun care to skin care to color cosmetics, fine fragrances. And Allured Publishing has a slew of books that cover all these different types of products as well, that would be very helpful, and your other option is always school. There's Fairleigh Dickinson University, my alma mater, has a very wonderful cosmetic chemistry, Masters of science program that you can learn a great deal at. There are other programs in the area, mainly geared maybe more towards pharm, pharma, and skin care that also offer great insight into what the industry is all about, so I highly suggest that.

All right, so we have a question about mascara formulations and it's something that I actually think that is a really good topic to follow up with offline. So whoever asked the question about mascara products, please contact me and we can go through the different types of mascara formulations and what mascaras offer from volumes, lengthening, and all things like that.

Okay, so this is our last question. The question is, "What would I suggest if I wanted to thicken an oil phase of a water and oil emulsion as it's bleeding oil?" There are a few ways you can combat something like this. Obviously, we have commercial thickeners that are available that can thicken oils. In water and oil emulsions, the right amount of your emulsifier can also help with this kind of bleeding you speak about. For example, Dehymuls PGPH that I spoke about for shine and maybe anhydrous products is actually perfect for something like this. Lastly, though, sometimes just adding a wax or a consistency factor into your oil phase can really thicken it up, without thickening it too much, is perfect for what you're looking for. It's all about creating a system that, you know, is stable.

Trey McDonald: Well, perfect. Stephanie, thank you so much for a great and informative webinar, and a big thank you for everybody at BASF for putting this on today. We did wanna remind everybody that we will be sending a copy of the recorded presentation and a copy of the slides for you guys to share with your colleagues, download, watch at a later date. So, we will be sending a link of that to your email, so be checking your email for that when that does come through. Again, a big thank you for everybody for attending, and have a great rest of your day.