Tension in the Surfactants Market

By Cynthia Challener
JCT CoatingsTech Contributing Writer

Many properties of paints are determined by interactions that take place at surfaces. Control of surface interactions is achieved through the use of surfactants, or surface active agents. Because they are a key additive in coatings, surfactants have been affected strongly by the changing regulatory environment and the globalization and consolidation of the industry. They have been experiencing a growing need to meet environmental and technical requirements.

Surfactants act as wetting agents in aqueous formulations, stabilize pigments and dispersions, and control film formation. More generally, the main function of surfactants is to reduce the surface tension of a solution. These properties are important during both the production and application of the coating. Their importance has increased with the growing interest in water-based formulations.

Various different surfactant chemicals have been developed over the years to provide highly specialized performance parameters. The structure is typically comprised of a hydrophobic and hydrophilic portion. Cationic, anionic, and amphoteric surfactants are charged species and obviously can only be used in formulations where the charge can be tolerated. Anionic surfactants include sodium sulfates, alcohol sulfates, fatty alcohol ether sulfates, sulfoesters, and sulfosuccinates, and a variety of specialty blends. Alcohol sulfates account for the largest volume due to their lower price. However, as demand for specialty chemicals increases, interest in more complex anionic surfactants is growing.

Nonionic surfactants are neutral and therefore have wider applications. They offer effective performance characteristics for wetting, emulsification, and dispersing applications. Typical products include fatty alcohol ethoxylates, allyl phenol ethoxylates (APEO), alkyl polyglycosides, and various nonionic blends. Currently, APEOs are the largest class of nonionic surfactants, but their use is diminishing as they become more widely regulated.

Defoamers are typically either polysiloxanes or mineral and paraffin oils. Polysiloxanes offer better compatibility and lower surface tension, while mineral and paraffin oils have a lower price. Fluorosurfactants, fluoroalkyl modified polyacetates, along with polysiloxanes, are gaining interest due to their enhanced performance capabilities.

In coating formulations, the surfactants form micelles when the critical micelle concentration (CMC) is reached. In these spherical aggregates, the hydrophobic groups are in the center, while the polar groups face outward and are present at the liquid-air or solid-liquid interface and affect the conditions here. In pigment dispersions, the surfactants coat the pigment particles and cause them to repel each other, providing increased stability to the dispersion. The surfactants also help determine the size of the particle, which affects color intensity, shade, and light fastness.

The global market for surfactants is valued at $580 million dollars, according to The ChemQuest Group, Inc., and accounts for 6% of the total global market for additives that are used in paints and coatings. In the United States, the surfactant market (dispersants, wetting agents, and foam control agents) in 2006 was valued at $264-$270 million by consulting firm KSMangat, Netfill & Grower (KNG). Dispersants account for the largest dollar and volume share ($115-$120 million / 60-63 million lb), followed by defoamers and anti-foaming agents ($64-$65 million, 57-58 million lb) and wetting agents ($85 million, 35-36 million lb). The growth rate for surfactants ranges from 1% to 3% per year.

While there are numerous surfactant manufacturers, several key players dominate the market and account for a good percentage of the sales. This segment is based on fine chemistry and requires knowledge of sophisticated synthetic chemistry," notes Steven Netfill, KNG. "Customers demand very high levels of customer service and technical support. For many industrial and military applications, extensive testing is required to demonstrate the performance and benefits of new additives. All together, these factors create a very high barrier to entry into the surfactant market."

Those producers involved in the surfactant market have been responding to changing market conditions. The shift to waterborne, high solids, and energy cured coating formulations in response to increasing environmental regulations is a key driver in the surfactant sector. Higher energy and raw materials costs are also factors. "Overall, the performance expectations are higher, but the price is still at the equivalent or even lower price," Netfill says. "Paint and coatings manufacturers want a cost differential or a performance differential, or, in some cases, both. The successful surfactant suppliers have established good relationships with their customers and work to anticipate their technology needs," he adds.

JCT CoatingsTech spoke with several different surfactant manufacturers to learn about the key issues they face today. Input was provided by Kelly Boyer, global market manager, Performance Solutions at Air Products; Ronald Lee, industry manager for BASF's Industrial Specialties in North America; Peter Manshausen, managing director of Borchers; and LANXESS company: Ande Bendio, industry manager—Industrial Coatings for Ciba Specialty Chemicals; Michael Hoque, Cognis' NAFTA market manager; Coatings, Construction, and Packaging; Christopher J. Martin, global market segment leader, Zonyl® Fluorosurfacants at DuPont Chemical Solutions Enterprise; Frank Fostak, International Specialty Products' (ISP) director of marketing and business development, North America Performance Coatings business; Martin Wusik, global market manager, Coatings, with Momentive Performance Materials (formerly GE-Advanced Materials, Silcones); John Foley, vice president, Industrial Formulations, for Rhodia's Novecane enterprise; and Robert Miller, product manager for Troy Performance Additives and Defoamers.

What are the main issues/challenges facing surfactant producers in 2007? K. Boyer, Air Products: One of the toughest challenges facing our business is managing the opportunities and threats resulting from a global economy. Manufacturing of North American and European markets is being offset by high growth potential in Eastern European and Asian emerging markets. Existing customers in the mature geographies are expanding into high growth regions with existing formulations, thereby creating a pull-through effect for additive suppliers. However, local additive suppliers are emerging in these high growth markets, offering low-cost alternatives, which results in a more intense competitive environment. Creating and sustaining a competitive advantage is becoming more difficult.

R. Miller, Troy: The rising price of raw materials and energy has provided us with the challenge of demonstrating to the customer how our products can promote value for them. We have been forced to raise prices as have all suppliers so it has
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Many properties of paints are determined by instructions that take place at surfaces. Control of surface interactions is achieved through the use of surfactants, or surface active agents. Because they are key additives in coatings, surfactants have been affected strongly by the changing regulatory environment and the globalization and consolidation of the industry. There has been an increase in regulatory focus, with increasing specialization and expertise in the sector. Surfactants also serve as wetting agents in aqueous formulations, stabilize pigments, improve gloss, and control foaming. In more general terms, the main function of surfactants is to reduce the surface tension of a solution. These properties are important during both the production and application of the coating. Their importance has increased with the growing interest in water-based formulations.

Various different surfactant chemicals have been developed, over the years, to provide highly specialized performance parameters. The structure is typically comprised of a hydrophobic and hydrophilic portion. Cationic, anionic, and zwitterionic surfactants are charged species and obviously can only be used in formulations where the charge can be tolerated. Anionic surfactants include alkyl sulfates, alcohol sulfates, fatty alcohol ether sulfates, sulfonates and sulfosuccinates, and various blends. Alcohol sulfates account for the largest volume due to their lower price. However, as demand for higher performance increases, interest in more complex anionic surfactants is growing.

Nonionic compounds are neutral and therefore have wider applications. They offer effective performance characteristics for wetting, emulsification, and dispersing agents. Typical products include fatty alcohol ethoxylates, alkyl phenol ethoxylates (APEO), alkyl polyglycosides, and various nonionic blends. Current ly, APEOs are the largest class of nonionic surfactants, but their use is diminishing as they become more widely regulated.

Defoamers are typically either polyglycol ethers or mineral and paraffin oils. Polyglycol ethers offer better compatibility and lower surface tension, while mineral and paraffin oils have a lower price. Fluorosurfactants, fluorocarbon modified polyacrylates, along with polyglycol ethers, are gaining interest due to their enhanced performance capabilities.

In coating formulations, the surfactants form micelles when the critical micelle concentration (CMC) is reached. In these spherical aggregates, the hydrophobic groups are in the center, while the polar groups face outward and are present at the liquid-air or solid-liquid interface and affect the concentration. Once in dispersion, the surfactants coat the pigment particles and cause them to repel each other, resulting in increased stability to the dispersion. The surfactants also help determine the size of the particles, which affects color intensity, shade, and lightfastness.

The global market for surfactants is valued at $88 billion dollars, according to The Chem Group, Inc., and accounts for 6% of the total global market for additives that are used in paints and coatings. In the United States, the surfactant market (dispersants, wetting agents, and foam control agents) in 2006 was valued at $2.64–$2.70 billion by consulting firm Kline & Company (KNG). Dispersants account for the largest dollar and volume share ($135–$120 million / 60–63 million lb), followed by defoamers and anti-foaming agents.

($64–$65 million, 57–58 million lb) and wetting agents ($85 million, 35–36 million lb). The growth rate for surfactants ranges from 7% to 9% per year.

While there are numerous surfactant manufacturers, several key players dominate the market and account for a good percentage of the sales. This segment is based on fine chemistry and requires knowledge of sophisticated synthetic chemistry, notes Steven Netfil, of KNG. "Customers demand very high levels of customer service and technical support. For many industrial and military applications, extensive testing is required to demonstrate the performance and benefits of new additives. All together, these factors create a very high barrier to entry to the surfactant market."

Those producers involved in the surfactant market have been responding to changing market conditions. The shift to waterborne, high solids, and energy curved coating formulations in response to increasing environmental regulations is a key driver in the surfactant sector. Higher energy and raw materials costs are also factors. Overall, the trend by big suppliers for efficiency and increased sustainability is the key driver in the surfactant sector.

Robert Miller, product manager for Troy Performance Additives and Deformers, notes, "Through the use of different surfactant manufacturers to learn about the key issues they face today. Input was provided by Kelly Boyer, global market manager for Performance Solutions at Air Products; Ronald Lee, industry manager for BASF's Industrial Specialties in North America; Peter Manshagen, managing director of Borchers; and a LANXESS company: Ande Bendro, industry manager - Industrial Coatings for Ciba Specialty Chemicals; Michael Hoppe, Cognis' NAFTA market manager; Coatings, Construction and Packaging, Christopher J. Martin, global market segment leader, Zonyl Fluoroadditives with DuPont Chemical Solutions Enterprise; Frank Fustek, International Specialty Products (ISP) director of marketing and business development, North America Performance Chemicals business; Martin Wisik, global market manager, Coatings, with Momentive Performance Materials (formerly Ge-Advanced Materials, Silicones); John Foley, vice president, Industrial Formulations, for Rhodia's Novecare enterprise; and Robert Miller, product manager for Troy Performance Additives and Deformers.

What are the main issues/ challenges facing surfactant producers in 2007?
K. Boyer, Air Products: One of the toughest challenges facing our business is managing the opportunities and threats resulting from a global economy. Manipulation of North American and European markets is being effected by high dispersions, and the potential in Eastern European and Asian emerging markets. Existing customers in the mature geographies are expanding into high growth regions with existing formulations, thereby creating a pull-through effect for surfactant producers. However, local additive suppliers are emerging in these high growth markets, offering lower-cost alternatives, which results in a more intense competitive environment. Creating and sustaining a competitive advantage is becoming more difficult.

R. Miller, Troy: The rising price of raw materials and energy has provided us with the challenge of demonstrating to the customer how our products can provide value for them. We have been forced to raise prices as have all suppliers so it has...
been necessary to work closely with our customers to optimize the use of surfactants/dispersants for improved performance and to reduce pricing of the final coating.

R. Lee, BASF: The main challenges facing surfactant producers will be with nanocoatings as well as addressing the changing environmental climate. This includes regulations to reduce volatile organic compounds (VOC) emissions in addition to environmental initiatives in the coatings industry.

M. Wishart, Momentive: The need and desire to meet increasingly stringent VOC limits in many coatings applications, as well as market initiatives to promote environmentally friendly technologies.

J. Foley, Rhodia: Our top priorities are centered around understanding customer needs and then developing new solutions that help to lower their costs while delivering unique characteristics and overall reliable product performance. To do so, we need to navigate the raw material and energy landscape, changing regulations, and customer needs. Large and small. We seek to stay close to customers wherever they are and to provide them with consistently high-quality products that are easy to use, with improved eco-toxicity profiles, under economical terms.

JCT: What are the key trends in this segment?

A. Benda, Ciba: There are two key trends in this segment. The first involves the move towards lower VOC formulations, which will create re-formulation opportunities. surfactants or modifiers for their product offerings to capitalize on the second is commoditization. To offset commoditization, producers differentiation and confirmation of value is critical.

M. Hoppe, Cognis: Increasing end-user awareness [Wal-Mart initiative, etc.] will accelerate the phase out of alkyl phenol ethoxylates (APEOs) and drive up the overall demand for high performance and ultimately biodegradable "green surfactants." At the same time, formulators are driving raw material suppliers to develop higher performance surfactants that address market needs such as improved scrub resistance.

P. Manhausen, Ranken: Customers are demanding "tailor-made solutions" for their specific coating systems in order to differentiate their products from the competition. More and more developments are either focused on overcoming formulation processes and/or searching for new solutions like highly effective, environmentally friendly dispersants with universal compatibility, or highly specialized materials which satisfy, for example, the different requirements of organic and inorganic components in low-VOC systems. Due to this ongoing specialization, suppliers of additives need to have a good understanding of customers' needs and general trends—or maybe even set the trends.

C. Martin, DuPont: As the use of solvents in coatings continues to be reduced, a number of coating performance issues are arising. They include blocking; shorter open time, cataracts, dirt pickup, and foaming. Formulators solve these problems by adding a variety of different additives to their water-based coatings. At DuPont, we have found Zonyl® useful to address many formulation problems and eliminate the need for many of these additives.

JCT: Where do the opportunities lie?

J. Foley, Rhodia: We still see significant opportunities in the United States. The U.S. is still the global leader in manufacturing. innovation, and engineering, and this leadership helps to propel the double-digit growth that we're experiencing by industrial applications.

R. Lee, BASF: The opportunities lie in promoting sustainable solutions that address both environmental and performance requirements while maintaining or improving cost/performance requirements. At the same time, formulators are driving raw material suppliers to develop higher performance surfactants that address market needs such as improved scrub resistance.

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P. Manhausen, Ranken: There is a demand for materials that combine better emulsification with lowest foaming tendency during manufacturing and application of a coating. Additionally, dispersants containing chelating agents can control foam by sequestering free metal ions. Such products will be of great benefit for the detergent industry.

M. Hoppe, Cognis: Continued need for productivity improvements combined with a market need for more environmentally friendly solutions will open up new doors for ultimate biodegradable "green surfactants." This trend will be accelerated by the continued volatility in crude oil pricing and increasing costs for chemical-derived surfactants plus potential greenhouse gas emissions.

A. Benda, Ciba: As always, the changing landscape in legislation, such as the pollutant stringency VOC regulations, will create opportunities. In this case, a premium will be placed on introducing new surfactants and surfactants that enable less VOC in formulations.

R. Miller, Troy: The pressures on the customer for improved coated materials coupled with the demands of regulatory change offer an opportunity for the customer to provide surface treatments with demonstrated improved brightness that are environmentally friendly. Resins developed for low- and non-VOC coatings have inherent shortcomings that can be dramatically improved with the proper optimized surfactant.

M. Hoppe, Cognis: What new technologies are on the horizon and what benefits will this bring to the industry?

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been necessary to work closely with our customers to optimize the use of surfactants/dispersants for improved performance, and as a result, a reduced price of the final coating.

R. Lee, BASF: The main challenge facing surfactant producers will be in maintaining costs as well as addressing the changing environmental climate. This includes regulations to reduce volatile organic compounds (VOC) emissions, as well as market initiatives to promote environmentally friendly technologies.

M. Wisul, Momentive: The need and desire to meet increasingly stringent VOC limits in many coatings applications, while maintaining or improving final product performance, is one of the biggest current challenges in the coatings industry.

P. Manuhasen, Berchtes: For basic, low molecular weight surfactants, increasing raw material and energy costs will have a major impact. Additionally, regulations such as "REACH" in Europe or the VOC limitations in different parts of the world will lead to a change of coatings systems with new requirements for all additives used therein.

C. Martin, DuPont: The industry must keep pace with new government regulations, but it must also stay ahead of them. It is an ongoing and important challenge. For example, DuPont recently announced that we have successfully commercialized a new, patented manufacturing process to remove greater than 97% of trace levels of perfluorooctanoic acid (PFOA) and its are topomers from surfactants and direct precursors from our fluorometer products. This milestone meets key commitments of the U.S. EPA voluntary stewardship program for product content three years ahead of schedule.

F. Fisal, ISP: The primary driver will be environmental issues (biodegradability, endocrine disruption) and the recent Wall-Mart initiative to eliminate NPE from products.
foaming, dispersing, and adhesion promotion. These products address environmental/performance requirements, and provide flexibility to the coatings formulator.

P. Matthias, Borchers: Borchers has recently launched Borchip Gen 4515, a new acrylic sculpt block copoly-
mer that is developed as a versa-
tile disperant for inorganic and or-
ganic pigments in waterborne systems. Borchers exhibits outstanding compatibility with all types of binders and significantly improves gloss and color stability. Even ex-
tending gloss retention after weather-
ing of a coating.

In 2007, Borchers will celebrate its 200th anniversary. We will cel-
brate by launching several new prod-
ucts, including a group of new
PLI-based versatile HAPS and VOC-
free materials for higher pigment load in concentrated or selected or-
ganic pigments. In contrast to cur-
rently known dispersions, pigment con-
centrates based on these new ma-
terials will have improved color strength, low viscosity, and an ex-
cellent compatibility with a wide range of binder systems, generating improved stability even in combination with some critical pigments. Our patented Borchip Gen 4051 is just one of this group of new dis-
persants. This 100% VOC-free polyurethane has wide compatibil-
ity and high efficiency for acrylic car-
bon blacks in high-performance coatings. Due to its excellent com-
patibility, Borchip Gen 451 improves the "blacks" to a more bluish tone.

Borchers recently strengthened its Asian involvement, inaugurating a new technical center in Shanghai and hiring new technicians in India. These additional efforts will im-
prove proximity to local customers, thus strengthening the company's regional position.

A. Benda, Ciba: Our Cibaf EFAK® 6225 dispersing agent, which uti-
izes fatty acid modified emulsion (FAME) technology, is ideal for uni-
versal colors. The 100% solids product offers a significant advan-
tage in VOC formulations. Through design, the product ex-
hibits excellent compatibility in both water and solventborne-based paints and provides wetting in water-containing basestocks.

M. Hoppé, Cognis: The newest sur-
factants from Cognis are our Dispo-
ron AXF range of products, which are highly biodegradable, nonionic, high performance sur-
factants that represent a high perform-
ance alternative to environmentally problematic alkylphenol ethoxy-
lates (APEO). They can be used in many industrial processes including dewatering and anti-foaming as a co-
stitute of the Federation of German Industries (BDI) has given our Dis-
ponor AXF range of surfactants its
prestigious "BDI Umweltzeichen" environmental award in the "envi-
ronmentally friendly products" catego-
ry. Separately, we have increased our ex-
port production of our sulfation plant at our manufacturing facility in Karlsruhe.

C. Martin, DuPont: DuPont re-
cently launched SPF series of Products, a superior performing line of fluorocarbon products based on existing DuPont Zonyl chemistry. DuPont's manufacturing process will reduce more than 97% of all trichloroethylene (TCE) and many high volatility organic compounds.

M. Uusitalo, Momentive: Our new Performance Materials Inc., a new company created by the sale of GE's Advanced Materials business to Apollo Management, will be focused on technology and service excellence in the silicone, quartz, and ceramics industries. The former GE Advanced Materials management team, led by president and CEO Wynn Hewett, will continue in their new roles in the new business. In addition, the former joint ventures GE Bayer Silicones and GE Toshiba Silicones, their managements, and their management teams, are now part of Momentive Performance Materials.

CoastOil Y-15790 and Y-15791 wetting agents, developed based on Momentive's knowledge in the area of superspreaders, were introduced late in 2006 and are available for sampling. These materials show ex-
cellent wetting, flow, and leveling properties in many systems and serve to be especially useful in wet-
ting difficult substrates. The
CoastOil products take advantage of dynamic surface tension gradi-
ts to drive wetting to the ultimate limit. They are a versatile blend of non-
polar surfactants, allowing excellent wetting without extremely low sur-
face tension measurements.

CoastOil (a trademark of Momentive Performance Materials Holdings Inc.)

J. Faley, Rhodia: Our family of phosphorus functional monomers (Sipomer PAM series) has been suc-
cessfully launched over the past few years. They can significantly im-
prove the adhesion properties of polymer resins to a variety of differ-
ent metal surfaces. Another new product we have just introduced into the market is ABEX 8018, a very versatile APE-free surfactant for use in various different polymer sys-
tems such as acrylic, vinyl, acrylic, and SBS.

Overall, Rhodia launched 10-15 new products per year, and we ant-
icipate maintaining this rate for the
next two to three years. Our new prod-
ucts push our customers with total formulation, reductions in greenhouse gas emissions, and low VOCs. Our indus-
trial formulations can provide a one-stop approach for coatings technologies.

We are proud of our technology syner-
gies, proud of our sustainable product development, and proud of our customer partner-
ships. It's a combination that we ex-
pect will continue to work very well for all segments of customers, any-
where in the world.

Looking ahead, we see new de-
velopments on coacervation agents for low-VOC and low odor. We are re-
cently announced surfactant capac-
ity expansions at our plants in Blue Island, IL. Rhodia has also made a

A. Benda, Ciba: In the next five years, the market will grow in volatile, but grow slightly less in value. Competition in the mar-
ket will intensify along with commodization. To maintain market share, the market leaders will have to develop differentiated products.
foaming, dispersing, and adhesion promotion. These products address environmental/performance requirements, and provide flexibility to the coatings formulator.

P. Matthiessen, Berich, Borchers, has recently launched Borch1® Gen 4533, a new acrylic block copolymer that is designed as a versatile dispersant for inorganic and organic pigments in waterborne systems. It exhibits outstanding compatibility with all types of binders and significantly improves gloss and color stability, even extending gloss retention after weathering of a coating.

In 2007, Borchers will celebrate its 200th anniversary. We will celebrate by launching several new products, including a group of new PUL-based versatile HAPS and VOC-free materials for higher pigment load in concentrates of selected organic pigments. In contrast to currently known dispersants, pigment concentrates based on these new materials will have improved color strength, low viscosity, and an excellent compatibility with a wide range of binder systems, generating improved stability even in combination with some critical pigments. Our patented Borch1® Gen 4533 is of this group of new dispersants. This 100% VOC-free polyurethane has wide compatibility and high efficiency for acrylic carbon blacks in high-performance coatings. Due to its excellent compatibility, Borch1® Gen 4533 improves and strengthens the "blacks" to a more bluish tone.

Borchers recently strengthened its Asian involvement, inaugurating a new technical center in Shanghai, and hiring new technicians in India. These additional efforts will improve proximity to local customers, thus strengthening the company’s regional position.

A. Benda, Ciba: Our Cibaf EK® 6223 dispersing agent, which utilizes fatty acid modified emulsion (FAME) technology, is ideal for universal colors. The 100% solids product offers a significant advantage in VOC formulations. Through design, this product exhibits excellent compatibility in both water and solventborne-based paints and coatings, and wetting in water-containing basecets.

M. Hopp, Cognis: The newest surfactants from Cognis are our Dispersol® AFX range of products, which are highly biodegradable, nonionic, high performance surfactants that represent a high performance alternative to environmentally problematic alkyloxyethoxy alcohols (APE). They can be used in many industrial processes including dyes, metal polishes, as a penta additive. The Federation of German Industries (BDI) has given our Dispersol AFX range of surfactants its prestigious "BDI Umweltzeugnis" environmental award in the "environmentally friendly products" category. Separately, our recently expanded production of our sulfation plant at our manufacturing facility in Kankakee, IL.

C. Martin, DuPont: DuPont recently introduced three new surfactants products, a superior performing line of fluorocarbon products based on existing DuPont Zonyl chemistry. DuPont Futh ITS Machinists to continue to focus on technology and science efficiency in the silicones, quartz, and ceramics industries. The former GE Advanced Materials management team, led by president and CEO Wayne Hewett, will continue in the business. In addition, the former joint ventures GE Bayer Silicones and GE Toshiba, their owners and their management team, are now part of Momentive Performance Materials.

Coastal Oil Y: 15790 and Y:15791 wetting agents, developed based on Momentive’s knowledge in the area of superdispersers, were introduced late in 2006 and are available for sampling. These materials show excellent wetting, flow, and leveling properties in many systems, and seem to be especially useful in wetting difficult substrates. The Coastal Oil products take advantage of dynamic surface tension gradients to drive wetting, and are both non-polar substrates, allowing excellent wetting without extremely low surface tension measurements. (Coastal Oil is a trademark of Momentive Performance Materials Holdings Inc.)

J. Foley, Rhodia: Our family of phosphonic functional monomers (Siperon PAM series) has been successfully launched over the past few years. They can significantly improve the adhesion properties of polymer resins to a variety of different metal surfaces. Another new product we have just introduced into the market is ABEX 8018, a very versatile APE-free surfactant for use in various different polymer systems such as acrylic, vinyl acrylate, and SB.

Overall, Rhodia launches 10-15 new products per year, and we anticipate maintaining this rate for the next two to three years. Our new products push our customers with total formulating reductions, lower biodegradable or biodegradable reject profiles, and low VOCs. Our industrial formulations can provide a one-step approach for coatings technologies. We are proud of our technology synergies, proud of our sustainable product development, and proud of our customer partnerships. It’s a combination that we expect will continue to work very well for all segments of our customers, anywhere in the world.

Looking ahead, we see new developments on coalescing agents for low-VOCs and low odor. We recently announced surfactant capacity expansions at our plants in Blue Island, IL. Rhodia has also made a major commitment to the developing regions of the world, with significant investments in India.

R. Miller, Tiny: New products from Tiny have focused on providing substrate wetting and surface flow and leveling without contributing VOCs. Our new system is Trosyl ZLAC, which utilizes the active ingredient of proven Trosyl LAC with no VOCs. Products will be introduced for solvent and solvent free systems in the near future.

JCT: What new products have you introduced recently that you would like to highlight? What are their properties and advantages?

K. Krey, Air Products: Air Products has recently introduced a new line of dispersants under the ZenSurf brand name. They function to disperse and stabilize pigments and are specifically designed for use in waterborne coating and ink systems. These environmentally friendly additives are APE-free and offer increased color development properties with reduced dispersant demand, resulting in better cost in use. Developed for all pigment types—organic, inorganic, and carbon black—these products can provide higher pigment loading without the increased viscosity seen with conventional dispersant technology.

Carboxyl surfactants are a new family of additives that enable formulation flexibility and enhance performance with budget in mind. By contributing to foaming, substrate wetting without concomitant foaming, these products offer optimal value in use. Carboxylates and carboxylates with strong environmental preferable alternatives to nonylphenol ethoxylates (NPE) and alkylphenol ethoxylates (APE) surfactants.

R. Lee, BASF: BASF has launched PLLACOAT™, a portfolio of specialty additives that can help paint, coating, ink, adhesive, and other end-users address to needs that range from environmental compliance to improved performance requirements. BASF’s PLLACOAT brand additives are based on novel, proprietary technology focused on functional performance, PLLACOAT consists of three functional platforms addressing environmental compliance (low-VOC, APE-free); pigment dispersing applications; and multipurpose coating applications requiring enhanced performance, such as writing, de-