Bioactive materials: A new approach to dental care

By Larry Clark, FAIDFE, CAED, and Fredrick M. Berk, BA, FAIDFE, Pulpdent Corp.

Today’s new and innovative technologies hold a great potential to improve oral health and advance dental care. One of those budding technologies is evident in the ACTIVA BioACTIVE product range (Pulpdent, USA). As part of a new class of esthetic, bioactive restorative dental materials, it offers an alternative to traditional composite restoratives and delivers direct benefits to dentists and patients.

Bioactive materials are “smart,” moisture-friendly and dynamic. By their various reactions in the mouth, they play an active role in the oral environment and stimulate formation of a layer of protective, apatite-like crystal deposits at the material-tooth interface that forms a natural bond between the material and living tissue. This natural protective remineralization process knits the restoration and the tooth together. A crystallized connective layer penetrates and fills micro-gaps, seals margins, guards against recurrent caries and prevents the staining associated with microleakage and failure.

ACTIVA BioACTIVE materials are the first dental restoratives with a bioactive resin matrix, shock-absorbing resin component and reactive glass fillers designed to mimic the physical and chemical properties of natural teeth. ACTIVA responds to pH cycles in the mouth with release and recharge of calcium, phosphate and fluoride. ACTIVA BioACTIVE products resist fracture and chipping at the margins while maintaining the high compressive and tensile strength and wear resistance required of esthetic restorative materials. By their chemistry, they easily adapt to irregular tooth surfaces and exhibit wear resistance comparable to traditional composites.

The Mixpac™ Colibri mixing tip (Sulzer Mixpac, Switzerland) mixes the base and catalyst of the two-component material, prevents air bubbles with the 360-degree fully turnable and bendable needle and allows for precise placement of material, even in post holes and hard-to-reach areas. Placing the Mixpac Colibri mixing tip along the wall at the floor of the cavity, allowing the restorative material to flow ahead of the needle, and keeping it submerged in the material at all times ensures intimate adaptation with tooth structure and a gap-free restoration.

ACTIVA BioACTIVE-CEMENT stimulates continuous formation of calcium and phosphate crystals that strengthen the surrounding dentin and ensure marginal integrity. This crystalline seal is virtually insoluble and friendly to surrounding tissues. These unique chemical and physical properties provide a durable, long-lasting seal for crown and bridge placements fabricated with both traditional and newer materials.

ACTIVA BioACTIVE-CEMENT has self-etching, self-adhesive properties and is both light-curing and self-curing. Its syringe delivery system in combination with the Mixpac Colibri mixing tip provides an easy and simplified cementation procedure.

After more than three years of clinical use and more than 25 published studies, ACTIVA BioACTIVE materials have been validated and proven successful. A one-year Clinical Performance Report from The Dental Advisor awarded ACTIVA its highest 5-plus rating (++++) and a 98 percent approval rating.¹⁰

A 36-month recall visit of an early ACTIVA placement looked like newly placed. This provides further clinical proof of the material’s ability to penetrate and integrate with tooth structure and form a positive seal against microleakage.

A list of references is available from the publisher on request.

Fig. 1, 2: Top radiograph shows recurrent caries and wash out of cement on three-unit bridge. Bottom shows repair with ACTIVA BioACTIVE-RESTORATIVE. Photos/Dr. Robert Lowe, Provided by Sulzer Mixpac.

Fig. 3: Top, Colibri metal cannula swivels and easily bends to the desired shape for precise placement of materials and, bottom, easy access to cavity floors with the Colibri mix tip. Materials achieve intimate adaptation with tooth structure, creating a gap-free restoration. Photos/Provided by Sulzer Mixpac.

Fig. 4: Scanning electron microscopy image shows apatite formation and integration of the resin tags containing apatite into the dentinal tubules. The virtually insoluble crystalline seal is friendly to surrounding tissues, creating a durable, long-lasting seal for crown and bridge placements whether fabricated of traditional or newer materials.

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ACTIVA BioACTIVE-CEMENT stimulates continuous formation of calcium and phosphate crystals that strengthen the surrounding dentin and ensure marginal integrity (Fig. 4). This crystalline seal is virtually insoluble and friendly to surrounding tissues. These unique chemical and physical properties provide a durable, long-lasting seal for crown and bridge placements fabricated with both traditional and newer materials.

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Kettenbach recently launched Sugi Butterfly, a non-sterile, unique cotton fiber and cellulose barrier that is available in two sizes: small and large.

According to the company, it is ideal for absorbing oral fluids up to 20 times its weight, while providing tissue isolation and patient comfort. As a lint-free and shred-resistant barrier, it will not inadvertently contaminate restorative procedures, according to the company.

The company describes the barrier as being easily placed and easily removed, so the work field can be maintained comfortably for the patient while providing for an optimum operating area.

**About Kettenbach**

Kettenbach, based in Huntington Beach, Calif., is the exclusive U.S. distributor for Kettenbach GmbH & Co. KG (Eschenburg, Germany).

Founded by August Kettenbach in 1944, Kettenbach GmbH was created for the development and marketing of medical and dental products. Today, the company is one of the leading international producers of dental impression materials and is also known in other surgical areas of medicine. The company’s brands include Panasil VPS Impression Material, Identium VSXE Impression Material, Futar Bite Material, Silginat Alternative Alginate, Visalys Temp Material, Mucopren Resilient Liner and Visalys Veneers.

For more information you can call (877) 532-2123 or visit www.kettenbachusa.com.
Admira Fusion x-tra: All ceramic-based direct bulk-fill restorative

*Biocompatible Nano-ORMOCER (ORGanically MODified CERamic)*

**By VOCO Staff**

VOCO has introduced Admira® Fusion x-tra, describing it as “the world’s first all ceramic-based direct bulk-fill restorative material.”

After almost two decades of intensive research and development, VOCO has created the first ever nano-ORMOCER® through the innovative fusion of VOCO’s proven nano-hybrid and ORMOCER® (ORganically MODified CERamic) technologies.

Admira Fusion x-tra’s chemistry base is formed by silicon oxide, making up both the glass fillers as well as the ceramic resin matrix, a first of its kind.

This unique “pure silicate technology” offers several advantages, including up to 50 percent lower polymerization shrinkage (1.25 percent by volume) than today’s conventional composites, as well as up to 50 percent lower shrinkage stress. These are two key physical properties in bulk-fill restoratives.

Admira Fusion x-tra has a 4 mm depth-of-cure for fast, long-lasting posterior restorations and is available in one universal shade. Admira Fusion’s nano-particulate amplifies its chameleon effect, enhancing its ability to adapt and blend to surrounding tooth structure.

The ORMOCER® matrix used within Admira Fusion x-tra makes the material highly biocompatible because it contains none of today’s classic monomers (BisGMA [BPA], TEGDMA, UDMMA, etc.). With an 84 percent (by weight) inorganic filler content, the light-cured, radiopaque Admira Fusion x-tra has excellent strength and wear properties, according to the company. Additionally, the company reports that it is compatible with all conventional bonding agents and offers homogeneous non-sticky handling.

To learn more, you can visit www.vocoamerica.com.

Cefla Medical Solutions names national sales director

Cefla Medical Solutions, a subsidiary of one of Europe’s top dental-unit manufacturers, has announced that Colby Ledbetter has joined the company as national director — sales and services. Ledbetter will direct overall sales efforts and follow-up service for dental practices interested in advancing their businesses and the industry in North America.

Ledbetter comes to Cefla with more than 20 years experience in the dental industry, most recently as U.S. regional sales director for a dental imaging and practice management solutions company that has its North American headquarters in Atlanta. There she was responsible for attracting, hiring, coaching and mentoring territory sales representatives in six southwestern states. She has had a great track record in sales, with significant growth in every territory she managed.

“Our team is extremely fortunate to have someone with Colby’s drive, knowledge and experience to assist customers as they strive to understand new technology, weigh options and succeed in implementing the best possible solutions for their practices,” said Cefla North America General Manager Massimo Di Russo. “She is a dynamic force in the industry, and we couldn’t be happier to have her join us as such a strong advocate for advancing dentistry.”

Ledbetter has an MBA in marketing management from LeTourneau University and a bachelor’s degree in biology from LaSierra University. She also served for four years active duty, in the U.S. Navy, where she was a fleet marine force dental technician. She has continued to give back to the community by volunteering for non-profits, such as the Mission of Mercy and CDA Cares.

Cefla Medical Solutions is focused on providing dental practices with units designed and manufactured to ensure premium product standards capable of leading the future of dental care.


(Source: Cefla Medical Solutions)
Barrier protection critical with dental gloves

Gloves with inferior capability could expose patient/user to harmful infections

While caring for their patients, dental and health care professionals are constantly exposed to bodily fluids that may carry viruses and other infectious agents. It is therefore critical that the gloves these professionals use provide the best possible barrier protection.

Many types of gloves are available today, but it is important to know that not all gloves have the same barrier capability, depending on the type of material used. For example, natural rubber latex gloves have long been acknowledged for their very effective barrier properties, while non-latex gloves, such as vinyl (polyvinyl chloride), have inferior barrier capability as shown by numerous studies.

Other synthetic gloves, such as nitrile and polyisoprene, perform much better than vinyl but are more costly, especially polyisoprene gloves. Using gloves with inferior capability could expose both the patient and user to harmful infections.

Quality, safety top priorities

Malaysia is the world’s largest medical gloves exporter (latex and nitrile). Both quality and users’ safety are of top priority to the nation’s glove industry. To this end, a quality certification program (the Standard Malaysian Glove, or the SMG) has currently been formulated for latex examination gloves.

All SMG-certified gloves must comply with stringent technical specifications to ensure the gloves are high in barrier effectiveness, low in protein and low in allergy risks, in addition to having excellent comfort, fit and durability — qualities that manufacturers of many synthetic gloves are trying to achieve.

Natural, sustainable resource

Latex gloves are green products, derived from a natural and sustainable resource, and are environmentally friendly. (You can learn more online by visiting www.amongline.biz or www.latexgloves.info).

The use of low-protein, powder-free gloves has been demonstrated by many independent hospital studies to markedly reduce the incidence of latex sensitization and allergic reactions in workplaces.

More important, latex-allergic individuals donning non-latex gloves can now work alongside their coworkers wearing the improved low-protein gloves without any heightened allergy concern.

However, for latex-allergic individuals, it is still important they use appropriate non-latex gloves, such as quality nitrile and polyisoprene gloves, which provide them with effective barrier protection.

Extensive array of brand, prices

Selecting the right gloves should be an educated consideration to enhance safety for both patients and users. For decades, gloves made in Malaysia have been synonymous with quality and excellence, and they are widely available in an extensive array of brands, features and prices.

They can be sourced either factory direct (www.mrepc.com/marketplace) or from established dental products distributors in the United States and Canada.

(Source: Malaysian Rubber Export Promotion Council)
Wireless and unconnected

Cut the cord without sacrificing any light

Cordless, compact LED DayLite WireLess can work with all of your loupes and frames

Designs for Vision’s new LED DayLite® WireLess™ not only frees you from being tethered to a battery pack, but the simple modular design also uncouples the “WireLess” light from a specific frame or single pair of loupes. Prior technology married a cordless light to one pair of loupes via a cumbersome integration of the batteries and electronics into the frame. The compact design of the DayLite WireLess is independent of any frame/loupes.

The patent-pending design of the LED DayLite WireLess is a new concept: a self-contained headlight that can integrate with various platforms, including your existing loupes, safety eye-wear, lightweight headbands and future loupes or eyewear purchases.

The LED DayLite WireLess is not limited to just one pair of loupes or built into a single, specific eyeglass frame. The LED DayLite WireLess can be transferred from one platform to another, expanding your “WireLess” illumination possibilities across all of your eyewear options.

Half the weight of integrated cordless systems

The LED DayLite WireLess weighs only 1.4 ounces and, when attached to a pair of loupes, the combined weight is half the weight of integrated cordless lights/loupes. The LED DayLite WireLess produces more than 40,000 lux at high intensity and 27,000 lux at medium intensity. The spot size of the LED DayLite WireLess will illuminate the entire oral cavity. The function of the headlight is controlled via capacitive touch.

The LED DayLite WireLess is powered by a compact, rechargeable lithium-ion power pod. It comes complete with three power pods. The charging cradle enables you to independently recharge two power pods at the same time and clearly displays the progress of each charge cycle. Designs for Vision has been showing the Micro Series together for the first time this winter. The Micro 3.5EF Scopes use a revolutionary optical design that reduces the size of the prismatic telescope by 50 percent and reduces the weight by 40 percent, while providing an expanded-field full-oral-cavity view at 3.5x magnification.

The new Micro 2.5x Scopes are 23 percent smaller and 36 percent lighter than traditional 2.5x telescopes, and enlarge the entire oral cavity at true 2.5x magnification. The Micro Series is fully customized and uses the proprietary lens coatings for the greatest light transmission.

You can “See the Visible Difference®” by visiting the Designs for Vision booth, No. 405 at ADHA’s annual session, Florida Dental Convention booth No. 15 or Pacific Northwest Dental booth No. 353. Or arrange a visit in your office by calling (800) 345-4009 or emailing info@dvimail.com.

(Source: Designs For Vision)

Universities, business partner to advance oral health care in East Africa

Researchers from Columbia University Medical Center (CUMC) are collaborating with the University of Nairobi, Unilever East Africa and the Columbia Global Centers | Africa to improve oral health care and disease prevention in East Africa and other resource-poor countries in the region. The project was officially launched at the East Africa Oral Health Summit, hosted in March at Columbia Global Centers | Africa.

Christian Stohler, DMD, dean of the Columbia University College of Dental Medicine, speaks at the East Africa Oral Health Summit.

Photos/Provided by Columbia University

* See AFRICA, page A8
Africa in Nairobi, Kenya.

The project is part of the Children’s Global Oral Health Initiative of the International Family AIDS Program (IFAP) Global Health Program at Columbia, which includes CUMC’s schools of dental medicine, nursing, medicine and public health. Additional key collaborators include the Ministries of Health in Kenya, Uganda, and Tanzania and the Kenya Dental Association.

With only one dentist for every 42,000 people, Kenya falls far below the World Health Organization’s recommendation of one dentist for 7,000 people. In addition, the majority of dentists in Kenya are found in urban areas, leaving most rural Kenyans without access to oral health care. Poor oral health in rural populations has been associated with other significant health problems, such as diabetes, cardiovascular disease and strokes, and absenteeism from work and school.

The Children’s Global Oral Health Initiative and its partners aim to improve oral health and related illnesses in Kenya, Uganda and Tanzania by integrating oral health care into the countries’ health prevention and education initiatives. The program leaders hope to inform policy that can be tailored to local needs and implemented by the Ministries of Health in these three countries.

“We have chosen to initially engage stakeholders from Kenya, Uganda and Tanzania because these three countries share a common history, ethnicity and language and cooperate both politically and economically,” said Dr. Kavita P. Ahluwalia, DDS, MPH, director of Global Oral Health Initiatives for Africa and South Asia at the Columbia University College of Dental Medicine and associate professor of dental medicine at CUMC.

Improved general understanding of the connection between dental health and systemic health among East Africans is an important part of the work, according to Christian Stohler, DMD, DrMedDent, dean of the Columbia University College of Dental Medicine, who attended the summit.

“The time has come for a radical change in our thinking about the importance of teeth and the mouth in terms of overall health,” Stohler said.

The summit included more than 100 leaders in oral health from Kenya, Uganda, Tanzania and the U.S., as well as high-level government officials and the highest-ranking dental officials from East African nations. The participants identified regional priorities and began defining next steps to address oral health needs. Sustainable models of oral care delivery were presented, including utilizing existing health care workers to offer preventive services and promote improved oral hygiene practices.

“The summit was a great success,” said Stephen W. Nicholas, MD, director of the IFAP Global Health Program, principal investigator of the Children’s Global Oral Health Initiative and professor of pediatrics and population and family health at CUMC. “It far exceeded our expectations at every level, including in participation, attendance and enthusiasm.”

The project will also include a research component. Students from CUMC’s four schools are scheduled to begin research in Kenya under the mentorship of Ahluwalia and Professor Regina Mutawe of the University of Nairobi.

Learnings from the project are expected to be applicable to other resource-poor countries in the region.

Unilever Vice President Personal Care, Debrah Mallowah signs the ‘oral health pledge.’ With her is Columbia University Dean, College of Dental Medicine, Dr. Christian Stohler (left) and Director, IFAP Global Health Program, Dr. Stephen Nicholas (right).

From left, Dean Christian Stohler, Columbia University College of Dental Medicine, and Professor Issac O. Kibwage, principal, College of Health Sciences, University of Nairobi.

Unilever’s Pepsodent toothpaste brand, in collaboration with the Kenya Dental Association, recently launched an educational program to encourage 1 million school children across the country to adopt—and promote within their families—better oral hygiene practices, including twice-daily tooth brushing.

Unilever will provide Pepsodent toothpaste at a reduced price to encourage correct toothpaste dosage and improve the frequency of brushing.

(Source: Columbia University College of Dental Medicine)
Designs for Vision Introduces

LED DayLite® WireLess™

Totally WireLess Headlight - no wires, no battery pack

Modular Design - uncoupled from a specific pair of loupes. Can be worn on your choice of eyewear.

Up to 50% Lighter Weight than other cordless models

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Privately Owned and Operated since 1961
The Tango-Endo system includes its own reciprocating handpiece. The latch-type handpiece is designed to aid in the prevention of binding and to assist in preservation of a canal’s unique anatomy. The kit also includes precision-matched gutta-percha points.

Here’s what dentists are saying:

- “Length of treatment was drastically reduced. It truly has simplified endodontics!” — Janet Williams, DDS, Hempstead, N.Y.
- “Any instrument that helps get the patients out of the chair faster is improving the experience.” — Bilyana Tesic, DDS, Redwood City, Calif.
- “Very easy to use and I love that it’s only two files.” — Abraham Jaskiel, DMD, Miami

To learn more visit www.edsdental.com/tangoendo or call (201) 487-9090.

(Source: Essential Dental Systems)

University, Henry Schein launch digital dentistry education program

Henry Schein Inc. recently announced the opening of the Henry Schein Digital Dentistry Program at Temple University’s Kornberg School of Dentistry. The goal of the training and delivery-of-care program is to prepare the next generation of dental professionals for advances in digital dentistry.

At a grand opening, students and faculty demonstrated the new 3-D imaging equipment, intraoral scanners and milling machines made available as a result of a partnership with Henry Schein. Five volunteer patients from Temple’s local underserved community received digital crowns, and one patient received an inlay, custom-milled on site.

“We are in the midst of unprecedented change in dentistry, driven by digital technology advancements,” said Henry Schein Chairman and CEO Stanley M. Bergman. “Yet one thing will never change, and that is the trust Temple’s Kornberg School of Dentistry can place in Henry Schein to help accelerate the adoption of digital dentistry. The profession and its future leaders can rely on Henry Schein to help increase productivity through digital solutions and services, support, education and training.”

Kornberg School of Dentistry Dean Dr. Amid Ismail said: “This new technology marks the beginning of a new era in oral health care, in which digital technology will dramatically improve patient outcomes. This will have a life-changing impact for those we serve. The scanners will reduce patient discomfort, and the milling of well-fitting crowns and other dental prostheses can be completed within a few days, instead of weeks. We are grateful to Henry Schein for giving us the tools that will help enable us to prepare our students for clinical practice, not only with this equipment, but with the type of positive learning experience that will prepare them to work in a technology-driven oral health care environment throughout their careers.”

(Source: Henry Schein)