Nanoscale fiber strengthens composites

Result is described as stronger, longer-lasting — and with low shrinkage stress

NovaPro Flow, designed and created by Nanova Biomaterials, is the first commercial dental composite reinforced by nanofibers. The in-house made hydroxyapatite nanofibers, composed of calcium phosphate minerals, are the secret to NovaPro Flow’s high strength, great handling properties and esthetic effects, according to the company.

Teeth, bones and nanofibers have the same structure, all composed of a hard inorganic mineral in a soft organic matrix. For example, the enamel of a tooth is made up of high-volume, needle-like mineral crystals (approximately 15–20 nanometers thick and 1,000 nanometers long) in a small-volume, soft protein matrix. Bone and dentin are made up of plate-like crystals (approximately 2–4 nanometers thick and up to 100 nanometers long) embedded in a collagen-rich protein matrix. By comparison, the nanofibers have a thickness under 100 nanometers in diameter, or 1,000 times smaller than human hair.

Most dental composites comprise only nanoparticles, while NovaPro Flow reinforces the composites with nanofibers, adding several advantages. The strength found in the nanofibers is due to its one-dimensional nature and large surface area. If you apply a shear force to a bunch of nanoparticles, it is easier for the particles to slide by each other. A fiber, on the other hand, has a solid connection that is stronger to resist bending, shear and tensile forces. In comparison, synthetic bulk hydroxyapatite typically has a tensile strength of approximately 50 MPa, which would not be able to reinforce a dental composite. The large size would also lead to polishing problems. The larger surface area of nanofibers provide better transfer of strength for the fiber and the dental composite alike.

During World War I, A. A. Griffith discovered the correlation between strength and the small size of ceramic materials, such as enamel, by testing different thicknesses of glass. According to the Griffith theory, these needle-like mineral crystals can reach their theoretical strength, or maximum strength, of a material (several or tens of GPa) when their diameters are in the nanoscale. Microscopic flaws cause a material to fail, so by creating a nanoscale fiber, statistically, it limits the amount of flaws and provides the ability to reach the material’s maximum strength. In addition, such mineral crystals at nanoscale are not sensitive to cracks or stress concentration, which typically degrades when produced on a micro or macro scale. The fibers are able to bend without breaking. The high strength and low sensitivity to cracks found in natural nanocomposites are the same advantages provided by the nanofiber reinforced NovaPro Flow.

(Source: Nanova Biomaterials)
“My personal journey at LVI taught me the most cutting edge techniques in dentistry. It taught me how important it is to work on my business and most of all to love what I do and provide my patients with life changing dentistry.”

Dr. Conchi M. Sanchez-Garcia, Miami, FL

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Rhein'83 OT Equator has reduced vertical profile of 2.1 mm and diameter of 4.4 mm

Rhein’83, a global producer of precision attachments on removable prosthesis, describes its OT Equator as the smallest dimensional attachment system on the market. It has a reduced vertical profile of 2.1 mm and diameter of 4.4 mm (metal housing included). It is compatible with any implant brand.

Superior stability
Because of its shape, Equator provides superior stability when compared with traditional attachments, according to the company. It corrects divergence of up to 25 degrees, the company reports. Functionality is guaranteed by coupling of attachment and cap.

Caps are available in four colors, based on levels of retention — from a minimum of 0.6 kg to a maximum of 2.7 kg.

Caps should always be used with metal housing.

Learn more
To learn more about OT Equator, you can contact the company by email at info@rhein83usa.it or by telephone at (877) 778-8383.

You can visit the company online at www.rhein83usa.com to learn more about all of its products and services, including the OT Equator.

(Source: Rhein’83)

Single-bottle adhesive self-cures with no light activation

Futurabond M+ needs only one coat and 35 seconds

VOCO recently introduced Futurabond M+, a universal single-bottle adhesive. Futurabond M+ versatility enables it to be used in self-, selective- or total-etch mode without any additional primers on virtually all substrates. Futurabond M+ achieves total-etch bond strength levels with all light-, self- and dual-cure resin-based composites, cements and core buildup materials. With a dual-cured activator, Futurabond M+ will self-cure without any light activation, which, according to the company, offers a big advantage for endodontic applications such as post cementation where it avoids the pooling effect, a problem with light-cured adhesives. Futurabond M+ also adheres well to metal, zirconia and ceramic, making extra primers unnecessary. Futurabond M+ needs only one coat and takes 35 seconds from start to finish. Its low film thickness of 9 microns makes bonding margins invisible (i.e. no “halo” effect) and prevents pooling problems. Additionally the material does not need to be refrigerated. Further Futurabond M+ benefits include its indication as a desensitizer for use under amalgam restorations or on hypersensitive tooth necks, as a protective varnish for glass ionomers as well as an intraoral repair of ceramic restorations.

For more information on Futurabond M+ you can visit the VOCO website at www.voco.com.

Futurabond M+ achieves total-etch bond strength levels with all light-, self- and dual-cure resin-based composites, cements and core buildup materials. Photo/Provided by VOCO
SHOW OFF THAT SMILE!

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Biocompatible
Antimicrobial
Dual-cure resin cement
Low solubility
Low film thickness
Great color contrast to tissue
Intermediate to Permanent retention
Easily retrievable
Made in USA

For more information visit: TAUBDENTAL.COM
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 couples 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 eyewear, lightweight headbands and future loupes or eyewear purchases. The LED DayLite WireLess is not limited to pairs of loupes or built into a specific eyeglass frame. The LED DayLite WireLess can be transferred from one platform to another, expanding your “WireLess” illumination possibilities across your eyewear options.

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.

Micro Series: Smaller, lighter, stronger
Designs for Vision has been showing the Micro Series together for the first time this fall. 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®” yourself by visiting the Designs for Vision booths, No. 433, at the AAP meeting, and booth Nos. 202 and 4625 at the GNYDM meeting. Or arrange a visit in your office by calling (800) 345-4009 or emailing info@dvimail.com.

(Source: Designs For Vision)

Wireless and unconnected:
‘WireLess’ headlight is self-contained

Revolutionizing local anesthetic delivery:
‘A shot that patients and practitioners love’

Anutra Local Anesthetic Delivery System provides simple platform for buffering

By Anutra Medical Staff

“I didn’t even know you gave me a shot,” Barb said as Dr. Kelly picked up his handpiece and went to work immediately. For decades, the idea of getting a dental injection has terrified patients. Quite frankly, the uncertainty, unpredictability and long onset time of local anesthetic equally terrifies the practitioner.

The Anutra Local Anesthetic Delivery System redefines local anesthetic delivery. It radically enhances patient experience and comfort while transforming a practitioner’s efficiency, profitability — as well as the profundity and predictability of local anesthetic.

Age-old science made simple
Buffering is an age-old science that has been used in the medical community for decades. Buffering is simply taking something acidic, mixing it with something more basic to neutralize the acid. So why does this matter in dentistry? Lidocaine with epinephrine has a low pH, meaning it is extremely acidic. In fact, its pH is close to that of citric acid, which is found in limes and lemons. Could you imagine injecting lemon juice into someone’s mouth? We simply would not do that.

Much of the burning and stinging sensation comes from the fact that local anesthetic is very acidic. The Anutra Local Anesthetic Delivery System makes buffering simple. By loading an Anutra Cassette at the beginning of the week, clinicians can simply buffer anesthetic for every patient by twisting the knob on the Anutra Dispenser. It could not be easier.

Topical effect, too
What adds to the amazing power of buffered anesthetic is a topical effect that is a result of a CO2 microbubble that is formed when local anesthetic is mixed with sodium bicarbonate. Many practitioners report dropping a small amount of the mucosa prior to injecting for a very powerful topical anesthetic.

Not only is patient comfort increased with buffered anesthesia, a practitioner’s efficiency is dramatically optimized. Since buffered anesthesia is raised to physiologic pH, the anesthetic crosses the nerve membrane more readily, meaning a patient can reach pulpal anesthesia in as little as two minutes, even with blocks. Additionally, anywhere from 4,000–6,000 times the active molecules of anesthetic will cross the nerve membrane, making it more profound than normal lidocaine as well as increasing the predictability that a patient will get numb the first time, even on those hard-to-numb patients.

Disposable, multidose, one-handed aspiration syringe
Not only does the Anutra Local Anesthetic Delivery System provide a simple platform for practitioners to buffer anesthesia in the practice, it also introduces the first-known, FDA approved, multidose, one-handed aspiration syringe that is fully disposable. Photo/Provided by Anutra Medical

Not only does the Anutra Local Anesthetic Delivery System provide a simple platform for practitioners to buffer anesthesia in the practice, it also introduces the first-known, FDA approved, multidose, one-handed aspiration syringe that is fully disposable. So what does that mean? It means that you can hold up to 6 ml of anesthetic in one single syringe. There is no need to reload cartridges; one syringe can hold the equivalent of at least three traditional 1.8 ml dental cartridges.

According to the company, with its affordable cost, revolutionary new syringe, simple dosing system and long shelf-life, the Anutra Local Anesthetic is a no-brainer for every dental practice.

By Anutra Medical Staff
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Dentatus ANEW is a different narrow-diameter implant for different challenges

Since inception in the 1990s, narrow-diameter implants have evolved from being used as transitional devices to a long-term solution for patients seeking less invasive and less time-consuming procedures. Dentatus ANEW is FDA-cleared for long-term use and backed by more than 30 years of clinical research.

Today, with proven reliable results, Dentatus ANEW implants are being used as an ideal option for single crowns with tight inter-proximal spaces. They can be placed in interdental spaces as narrow as 3.5 mm. With changes in the health care environment calling for more affordable treatment options, particularly for the geriatric patient, now is an ideal time to incorporate narrow-body implants into your armamentarium.

Dentatus ANEW is the only narrow-body implant with a screw-retained prosthetic system, according to the company. It features various abutments for both immediate and long-term screw-retained single- or multi-unit prosthetics. The introduction of the Ellipse abutment enables treatment for removable prosthesis with the DentureComfort technique.

Improves stability, stops rotation
Manufactured from a one-piece Grade-5 titanium alloy, Dentatus ANEW is available in 1.8, 2.2 and 2.4 mm narrow-body diameters. According to the company, the tapering implant design improves initial stability while the square platform prevents prosthetic rotation. The surface-treated thread promotes osseointegration, offering instant support.

For more information you can call (800) 323-3136, or visit www.dentatus.com. You also can visit booth No. 314 at the AAP Annual Meeting or listen to Dr. Ziv Mazor’s co-presentation of the Focused Continuing Education course, FCE1: “Narrow Diameter Implants,” on Sunday, Nov. 15, from 10:15-11:45 a.m.

Temporary luting material delivers natural appearance

VOCO’s Bifix Temp offers high esthetics with a simple application that provides users with visually pleasing results. The translucent and tooth-like universal shade blends with highly esthetic temporaries, does not shine through and promotes natural appearance of temporary restorations. Thanks to Bifix Temp’s low film thickness, temporaries can be cemented to fit without adjustment.

As a composite-based dual-cure material, Bifix Temp offers 90 seconds of working time and sets in four minutes. The light-cure mode offers the user control and easy removal of excess material via a “tack-cure” technique that activates an initial elastic gel phase. Any unwanted residues are easy to locate and remove as Bifix Temp’s universal shade stands out well against the gingiva.

Bifix Temp comes in an auto-mix syringe with very short tips, making application precise and economical. To learn more, you can visit www.voco.com.

(LVII NO. 314 BOOTH AAP)

LVI Core I three-day course enables dentist and team to learn together

By Mark Duncan, DDS, FAGD, LVIF, DICOI, FACMOD, Clinical Director, LVII

As a patient, I expect the best care I can find. As a doctor, I want to deliver the best care possible. That takes us to the power of continuing education, and as doctors we are faced with many choices in continuing education.

As a way to introduce you to the Las Vegas Institute for Advanced Dental Studies, or LVII, I want to outline what LVII is about and what void it fills in your practice. The alumni who have completed programs at LVII were given an independent survey, and unlike the typical surveys, 99.7 percent said they love practicing dentistry, and of those surveyed, 92 percent said they enjoy their profession more since they started their training at LVII. That alone is reason enough to go to LVII and find out more.

‘Advanced Functional Dentistry: The Power of Physiologic-Based Occlusion’

While the programs at LVII cover the breadth of dentistry, the most powerful and life-changing program is generally reported as Core I, “Advanced Function-