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President's Message

Lead The Way

hen it comes to digital scanners and other digital dental technology, we need to lead the way for our dentist clients.

According to the 2015 NADL Materials and Equipment survey, the latest available, nearly 40 percent of dental labs had a standalone digital scanner and 40 percent of those labs had more than one. Laboratory technicians aren't the only ones committing to digital dentistry. Dentists have been slow to adopt intra-oral scanners, but that is changing.

The global stand-alone intraoral scanners market was valued at \$55.3 million in 2014 and is expected to grow at a 13.9 percent compound annual rate from 2015 to 2022, according to a report from Research and Markets.

"Moreover, because of rising endeavors towards conveying speedier and less expensive dental treatment, intraoral scanners' selection is anticipated to witness solid development in the coming years. Further, advancement and entrance of PC helped drawing (CAD) and PC helped fabricating (CAM) is another variable supporting the reception of computerized scanners. Thus, the market is relied upon to enlist strong development worldwide amid the figure time frame," the report states.

It's important to remember though that just having the digital equipment isn't enough. There is a learning curve on the lab and dentist side of the equation to create the best possible outcome for the patient. That's where education comes into play because digital technology is just one of our tools, not the solution to every problem.

Like every other tool, digital technology is only as good as the technician who wields it. We must remember that every technician, whether he or she is a waxer to a CAD/CAM specialist, must know at least the basics of tooth morphology, occlusion and restoration design. It's difficult finding technicians who know of those right out of the gate, so we have to invest in training. That's where FDLA comes in. With the Southern States Symposium & Expo as well as the very affordable FDLA District Workshops, we can help our technicians gain the knowledge they need. In addition, there are online courses (check out the Foundation for Dental Laboratory Technology's online course finder) that can help newer technicians master the basics and more knowledgable technicians conquer digital scanners and digital dentistry.

And speaking of the Southern States Symposium & Expo, mark your calendars for May 11-13, 2017 and watch *focus* and the FDLA Website (www.fdla.net) for more information about speakers and how to register. The Southern States Symposium & Expo meeting is the largest dental laboratory industry



meeting in the country run by a nonprofit association. The educational sessions and expo will all provide you with beneficial information on the latest trends and technology updates. FDLA offers CDT/RG, AGD and State of Florida approved credits, so you will earn continuing education credits for attending the courses held during the symposium. I hope to see you there!

By Fernando Deleon FDLA president

Like every other tool, digital technology is only as good as the technician who wields it.

FDLA Mission

Serving Florida's dental technology professionals as a valued part of the dental team enhancing oral health care.

FDLA Vision

Advancing the individual and collective success of Florida's dental technology professionals in a changing environment.

Values Statement

FDLA's board of directors and professional staff are guided by these principles:

- Integrity
- Leadership
- Recognition
- Safety
- Acceptance
- Innovation

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Florida Dental Laboratory Association 325 John Knox Rd, Ste L103 Tallahassee, FL 32303 Phone: 850-224-0711 Fax: 850-222-3019

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focus Staff

Jillian Heddaeus, CMP, IOM Executive Director &

focus Publisher jillian@fdla.net

Bennett E. Napier, CAE Senior Advisor bennett@fdla.net

Cassandra Corcoran Editor editor@fdla.net

Maureen Turner Advertising Sales advertising@fdla.net

Christina Welty Program Manager membership@fdla.net



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TRIOS Intraoral Scanner

By Donnie Bridges, CDT

Accepting Intraoral Scans

Dental laboratories today are adapting to the changing landscape of the dental industry. Part of that changing landscape includes accepting intraoral scans from their dentist clients. As the market research company Credence Research has reported, the global stand-alone intra-oral scanners market was valued at \$55.3 million in 2014 and is expected to grow at a 13.9 percent compound annual rate from 2015 to 2022.

> Within this growing segment, there are a large number of intraoral scanners available—each of which has their own workflow of how to receive cases. It can be confusing to understand what needs to be done to accept files for each system at your laboratory. The laboratory scanners that are the most prevalent in the market place today are 3Shape, Exocad, Dental Wings and Sirona. Each of these systems have different requirements to accept digital files. The best resource for a laboratory to gain more information about what is required to accept intraoral scans from their dentists is to consult the reseller they bought the scanner from, or the reseller that currently manages their system. The following is a brief explanation to help clarify the workflow for some of the market leaders.

TRIOS Intraoral Scanner

The workflow for accepting an intraoral scan from TRIOS is dependent upon whether or not the laboratory has a 3Shape scanner. For the 3Shape lab, the ability to receive the scan within a 10 minute window is included in the 3Shape software. The 3 Shape software is necessary to accept a TRIOS intraoral scan. Your 3 Shape reseller can walk you through the steps to become TRIOS ready.

Laboratories that have a scanner other than 3Shape and have dentists with a TRIOS intraoral scanner have two options for receiving those files.

- The laboratory can purchase TRIOS Inbox Standalone, which enables an external lab to import files into a different third party CAD system. The TRIOS Inbox Standalone comes with its own separate dongle.
- The dentist can purchase TRIOS Scan Export (STL) to enable an STL of their TRIOS file to be sent directly to a non-3 Shape scanner for designing.

3M True Definition

With 3M True Definition, dentists send their intraoral scan STL files directly to the 3M Connection Center. The laboratory can then download the STL files from the Connection Center for production. Also, the

3M True Definition

iTero by Align Technology



laboratory has the option of purchasing 3M margin marking software. After downloading an STL file, the lab can mark and prepare the case and then choose to either receive a printed model from 3M or to send an open STL file to their in-lab model printer or to a company that offers model printing services.

3M offers subscriptions for all of these services. If the laboratory wants to mark their own margins, 3M requires that a certain number of cases go through the 3M Connection Center first to assure them that the laboratory has a level of proficiency with the software. Once the laboratory has been approved as a margin marking laboratory, they would then be able to create a STL file that can be sent for manufacturing.

E4D Planscan

Planmeca has a very informative page on their website that clearly explains the steps for importing their intraoral scans into multiple design software packages. The preferred method of delivery is Digital Dental Exchange (DDX), Romexis Cloud, or any other HIPPA compliant method. This system is typically sold



as a full chairside system (Planmeca FIT System) with PlanCAD Design, PlanMill 40 Mill (dentist's mill) and Romexis Software. If the laboratory wants sectioned dies, the cases must go to PlanCAD before arriving at the lab. There is a fee to receive cases through DDX. The laboratory has a choice to pay a fee per case or a yearly subscription.

iTero by Align Technology

There is a one-time fee to become an iTero laboratory. iTero offers three different levels to choose from.

- After receiving the dentist's scan files, the lab would use iTero's software to mark the margins and then have complete control where to send the model for manufacturing. With this fully open option, the laboratory has an open STL file created after marking the margins.
- 2. After receiving the dentist's scan files, the laboratory marks the margins and then sends to iTero to create the model. With this option, the laboratory controls where the margins are marked, but they do not have an open STL.
- 3. iTero marks margins and creates the models. This option is the least expensive way to become an iTero laboratory, but all control of the margin marking is taken away from the laboratory and the individual model charge is higher from iTero.

With any of the options above, the laboratory should confirm with iTero what the turnaround time for milled or printed models will be so the lab can plan accordingly. There are a large number of intraoral scanners available each of which has their own workflow of how to receive cases.



Cerec by Sirona

The market

for intraoral

scanners is

growing.

Cerec by Sirona

Without a number of tricky work arounds, the only way for a laboratory to receive a Cerec intraoral scan is to be a Cerec inLab owner. Cerec by Sirona is a closed system designed to only work within their Cerec dentist to inLab lab network. Sirona offers two options for the clinician:

- 1. Omnicam, featuring powder free scanning.
- 2. BlueCam, powdered scanning ideal for single tooth restorations.

A laboratory must use Sirona Connect to receive files and have physical models printed by infiniDent.

Carestream Dental

This is an open architecture system that can be purchased with CAD and mill for in-office operation. The dentist's mill is mainly meant for single tooth restorations. A laboratory must sign up for Carestream Connect to receive digital impressions. Any laboratory with DDX can also receive files.

Carestream Dental





Dental Wings

The intraoral scanner from Dental Wings is a dedicated scan-only chairside system with multiple options for design and fabrication. Captured data is transmitted to Dental Wings laboratories through DWOS Connect for prosthesis design and production. Laboratories with a scanner other than Dental Wings receive an exported STL file through DDX and then import into their system's design software.

The market for intraoral scanners is growing and by staying abreast of these workflow options, your laboratory can maintain its position as a trusted educational resource for your current and potential dentist clients. •

About the Author:

Donnie Bridges, CDT, is the Eastern Regional Sales Manager for Argen Corporation. He grew up in his family's laboratory. He has been certified in crown and bridge since 2002. Bridges has served on the board of directors for the Mississippi Dental Laboratory Association, Southeastern Conference



of Dental Laboratories and has acted as a past member of NADL's Visions Committee.

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Selecting a MILLING CENTER

By Keith Crittenden

electing a milling center partner might seem a relatively simple task and—for the most part—it is. Just try them and see if you like them. However, if you take the time to ask a few basic questions, you can have confidence in knowing that you are providing your dentists with premium quality milled restorations. Asking the right questions can also prevent you from selecting the wrong milling center and avoid potential problems that may result from a poor selection. Below is a list of questions that every lab owner

should ask when interviewing a potential milling center partner. For the most part, the questions are listed in the order of critical importance and/or priority in which you should weigh your decision.

YOU NEED TO KNOW IF THE MILLING COMPANY WILL SUPPORT YOU.

WHAT BRAND OF ZIRCONIA DO YOU USE?

This is a great early question because it leads to discovering the source of the zirconia you use.

IN WHAT COUNTRY IS THE ZIRCONIA PUCK MANUFACTURED?

This is important because different countries have different standards for purity and radioactivity levels. (Yes, all zirconia has some levels and various types of radioactivity, some stable and some less stable.) The manufacturing standards established in the USA, Europe and Japan are far stricter than the manufacturing standards in China.

WHAT IS THE MPA STRENGTH AND TRANSLUCENCY LEVEL OF THE ZIRCONIA BEING USED?

An Mpa value of 1,000 gives you the greatest flexibility for indicated use, allowing you to restore singles and round house bridges. As the Mpa increases, the zirconia gains opacity. Although there is no standard measurement currently being used amongst manufacturers to measure the opacity or the lumens, a 1,000 Mpa zirconia should provide you with an acceptable level of esthetics. You should be seeking translucency of about 34 percent. As the Mpa go down, the zirconia becomes more lifelike, but may not be strong enough for long span bridges.

WHAT IS YOUR SINTERING PROCESS AND/OR SINTERING TIMES?

Many milling centers are persuaded to improve the turnaround time at the cost of a thorough sintering process. An effective sintering process requires a very slow ramp up in temperature and a very thorough heat soak at peak temperature. This process can take anywhere from 11-17 hours, depending on whether you are sintering single units or bridges. Reducing these sintering cycles can give the appearance of offering a faster turnaround time and, therefore, better service. However, cheating on the sintering cycle can lead to a weaker zirconia crown or zirconia that lacks vitality.

DOES THE MILLING CENTER ALSO PROVIDE SERVICES TO DENTISTS OR JUST TO DENTAL LABS?

I am always surprised to hear that labs have chosen to utilize a milling center that sells direct to dentists. You have to ask yourself if you are willing to financially support a milling center that is actually your competition. Any milling center that works with both labs and dentists obviously has an active marketing campaign to attract new dentist clients. You may be providing the milling center with additional marketing dollars to call on your dentists.

WHAT TYPE OF MILL IS BEING USED?

This is important to know because the type of mill greatly influences the level of consistency that you can expect. There are two basic types of mills.

- Smaller desktop mills designed for the lower volumes of your average small to mid-sized lab
- 2. Industrial mills that are designed for large production milling centers.

Some milling centers have purchased mills designed for lower volumes and burden them with the higher volumes found in a milling center. This is like using a small pickup truck to tow a large boat. These mills will not hold calibration due to the excess burden and you may see inconsistencies in the fits of your crowns.

WHAT IS THE TURNAROUND TIME?

While location seems to be a key criteria for many labs, if the milling center is delivering in a timely manner, then quality and service should weigh heavier than location. However, it is important to know the turnaround time so that you can continue to meet the service requirements of your dentists. A proficient milling center should also offer the possibility for rush services when the need arises, but should never take more than four business days from the time they receive your case to the time it is delivered back to your lab.

WHAT IS THE CUT OFF TIME FOR SENDING FILES DURING THE DAY?

For those labs who send design files to the milling center, this is important to know so that you can manage your own schedule and ensure that you meet the service requirements of your dentists. Again, be sure to check on the milling center's ability to respond to rush orders (without compromising quality and proper sintering as discussed above).

IS THERE A WARRANTY WITH THE PRODUCT?

You need to know if the milling company will support you in the event of a crown or bridge

AS THE MPA INCREASES, THE ZIRCONIA GAINS OPACITY. AS THE MPA GO DOWN, THE ZIRCONIA BECOMES MORE LIFELIKE, BUT MAY NOT BE STRONG ENOUGH FOR LONG SPAN BRIDGES.



failure at a later date. We know you likely won't be charging the dentist for the remake, so the last thing you need is for the mill center to charge you for the crown or bridge that broke in the mouth.

WHAT IS THE PRICE PER UNIT?

This is obviously important so that you can continue to be competitive in your pricing and still generate a profit.

WHAT IS THE SHIPPING POLICY CONCERNING COST AND DAYS IN TRAVEL?

You will need this information in order to evaluate the actual total cost for your restoratives to measure profitability and to ensure you can meet the service requirements of your dentists.

WHAT IS YOUR REMAKE POLICY?

Similar to the warranty question, it is important to know the remake policy in the event of a failure at time of placement.

WHO DOES THE DESIGN WORK, COMPUTER TECHNICIANS OR DENTAL TECHNICIANS?

For those labs who are sending models to the mill center, you will want to know if a qualified



technician is designing your cases or simply a person who is handy with a computer.

WHEN I AM READY TO GET MY OWN SCANNER OR MY OWN MILL, CAN YOU HELP ME WITH THE TRANSITION?

A good milling center won't try to keep you down. They will understand that we are an industry that is in flux and most milling center customers will eventually purchase their own scanners and their own mills. A milling center should be ready, willing and able to help you in this transition.

WHAT LEVEL OF TECHNICAL SUPPORT CAN I HOPE TO HAVE FROM THE MILL CENTER?

A good milling center should be able to provide you with high quality technical support on two fronts. The first front being dental technology support, and the second front being computer technology support as the two technologies have really merged into one.

Picking a milling center partner may be a relatively simple task, but that doesn't mean it can be done in a haphazard way. Be sure to ask the important questions so that your laboratory will benefit from the partnership. •

ABOUT THE AUTHOR:

Keith Crittenden has served the dental industry for more than 25 years as a partner in a dental practice and then as a dental lab owner. He is the founder and CEO of AmericaSmiles Network, a marketing and technology services organization committed to strengthening the dental lab industry by offering services, training and technology. The AmericaSmiles.com patient referral program includes a network of more than 800 local search sites to help people find a dentist. AmericaSmiles Network is a sponsor and partner of the American Cosmetic Dental Lab Association (ACDLA) and provides membership in the ACDLA to all AmericaSmiles Network labs. He can be reached at Keith@americasmiles.com.

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A GOOD MILLING CENTER SHOULD BE ABLE TO PROVIDE YOU WITH HIGH QUALITY TECHNICAL SUPPORT



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*Reference: Rianne Biemans (2013): Retentieverlies bij matrixsystemen voor de overkappingprothese. Nijmengen: Radboud University Nijmegen Medical Centre

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NADL 2016 Business Survey Respondents Answered:

How much of your work do you outsource to Domestic Labs?



How much of your work do you outsource to Offshore Labs?



Outsourcing, Global Reach and the Dental Laboratory

hen asked if their laboratory provides services to dentists outside the U.S., 94.9 percent of laboratory owners/managers reported providing services in the U.S. only. Another 3.5 percent provide services in Europe, 3.2 percent provide services in Canada, 2.8 percent provide services in Asia, 2.3 percent provide services in Mexico, 1.4 percent provide services in Central/South America, and 0.7 percent provide services in Africa. The likelihood of providing services outside the U.S. increases with laboratory size: small (0.7 percent), medium (10 percent), large (20.6 percent).

In terms of OUTSOURCING TO DOMESTIC LABORATORIES, the average amount of work sent out is 17.7 percent of total production. Half (49.6 percent) of respondent laboratories to the 2016 NADL Business Survey do not outsource any of their work domestically, 14.1 percent outsource as much as 9 percent of their work, 11.3% outsource between 10 percent and 19 percent, 9% outsource between 20 percent and 49 percent of their work, and 16 percent outsource 50 percent or more of their work to domestic laboratories. Work outsourced to domestic laboratories includes: partial frameworks (52.3 percent), crown restorations (29.5 percent), copings (24.9 percent), sleep apnea devices (17.2 percent), models (10.2 percent), and other (27 percent).

In terms of RECEIVING WORK FROM **DOMESTIC LABORATORIES**, the average amount of work received is 11.5 percent of total production. Nearly three-quarters (71.8 percent) of respondent laboratories do not receive any work from other domestic laboratories, 8.8 percent receive as much as 9 percent of their work, 3.6 percent receive between 10 percent and 19 percent of their work, 3.8 percent receive between 20 percent and 49 percent of their work, and 12 percent receive 50 percent or more of their work from domestic laboratories. Work received from domestic laboratories includes: partial frameworks (40.1 percent), crown restorations (36.6 percent), copings (31.7 percent), sleep apnea devices (12.9 percent), models (12.4 percent), and other (33.2 percent).

In terms of **OUTSOURCING TO OFFSHORE LABORATORIES**, the average amount of work sent out is 1.9 percent of total production. More than nine out of ten (93.9 percent) of respondent laboratories do not outsource any of their work overseas, 1.1 percent outsource as much as 9 percent of their work and 5 percent outsource 10 percent or more of their work to overseas laboratories. Work outsourced to overseas laboratories includes: partial frameworks (57.1 percent), crown restorations (54.3 percent), copings (17.1 percent), models (17.1 percent), sleep apnea devices (5.7 percent), and other (28.6 percent).

In terms of **RECEIVING WORK FROM OFFSHORE LABORATORIES**, the average amount of work received is 0.6 percent of total production. Nearly all (97.7 percent) of respondent laboratories do not receive any work from overseas laboratories.

Outsourcing to offshore laboratories has changed over time. Over the past three years, it has stayed the same for 10.6 percent of laboratories, increased for 5.2 percent of laboratories, and decreased for 3.2 percent of laboratories. The remaining 81 percent of laboratories do not outsource to overseas laboratories.

Reasons most often cited for outsourcing include price, requested by dental clients, labor savings, too much work to handle, and outside expertise. ()

Editor's Note: Percentages do not add to 100 because multiple responses were allowed.

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Adding Color Character to Acrylic

Using the Three Color and Optistipple Technique

oloring. Colorizing. Naturalizing.
 Whatever name you choose, its fast becoming a popular
 way to add value. However, that wasn't always the case.

Thirty years ago when I entered the dental technology field, most labs in operation felt it was an unnecessary service to offer color character to acrylic because many laboratory owners and technicians were reactive and not proactive about the services they offered. Fast forward to today when labs are trying desperately to set themselves apart in a commoditized market with custom, personalized prosthetics and color characterization is a way to do just that.

New materials—coupled with affordability, ease of learning and use—have enabled laboratories and technicians once resistant to offering such customized services to now see them as a viable means of setting themselves apart. In the case of removable prosthetics, it allows them to keep pace with the many labs that have finally discovered the benefit of a proactive rather than reactive mindset.

PMMA (denture base resin) colorization is obtainable two ways.

- 1. Internal colorization. This entails colorizing in the mold prior to packing by using raw colorants, colorized monomer, or powdered shades of base material (depending on who's technique one adopts) placed in accordance with natural contours developed in the base through waxing. Many rejected and still reject this technique as it has a steep learning curve because the result of your effort is revealed after curing, at which point it has become part of a final base and is uncorrectable without much effort.
- 2. External coloring or veneering. With this technique, the technician overlays composite colored in several biologic shades over the top of a processed and finished PMMA base. Techniques vary from large scale buildups requiring the removal and rebuilding of anatomic contours to just the highlighting of already existent contours established in the wax and processed PMMA base.

Considerations of extra time, expense, and marketability have always entered into the decision about whether a lab decides to implement this service. However, with a growing segment of laboratories willing to suffer the slight learning curve in order to set themselves apart, this service offering is growing exponentially. When implementing this technique at my lab, I didn't want to add too much



time to the production equation, so I needed to find a quick and dependable color default that would not add more time than the up-charge in fee could shoulder.

Let's look at a couple of case considerations and my basic technique using GC America Gradia and Optiglaze products as an introduction to performing this service.

Contour Considerations

When considering external base colorization, or any type of colorization, the key is to not fall into the trap of thinking that natural contour and tooth emergence can be built in after processing the denture. Sure, you can do it to some degree, but the quickest way to get turned off on the technique of external coloring is to spend more time and materials building, rather than utilizing what could have easily built in wax and processed in subsequent acrylic base. Also, keep in mind that contours approved in the wax try-in must stay pretty close to what was approved.

There are many considerations when incorporating natural contour into a denture base, but I recommend a few basic places to show immediate improvement in your wax-up (Figures 1A and 1B). Create a design that presents a less steep angulation toward the interproximal area, exposes the line angles of the tooth and allows for a more natural looking tooth-to-tooth root eminence transition. Pay careful attention to the tooth emergence profile and axial inclination, which helps depict correct amount of fullness and angulation in the eminence. Also, remember that subtlety is the key in contouring. The coloration will slightly add to the look of the contours because—although we are mostly highlighting what exists in the base—a small increment of material will be added.

Materials Needed

- Light curing oven for final cure with a light spectrum range of 455-470nm (GC Labolight or Labolight Duo preferable, but most ovens within the mentioned spectrum range are intense enough to cure composites will work.)
- Gradia Gum modifiers GM35, GM33, GM36
- GC Composite primer, GC Air barrier

Three Color Gradia Gum Technique Process

 Pre-finish the denture to a pumiced, matte-like surface without tool marks (Figure 2).

- Air-abrade the surface with 50 micron white, aluminous oxide. White or bleached aluminous works best as it won't leave dark streaks (Figure 3).
- Dust off abrasive lightly with dry, compressed air, but do not steam clean as it may impart moisture into the abraded surface, effecting the bond capability.
- 4. Paint a light coating of GC Composite Primer to all surfaces to be veneered and cure in a light curing oven of acceptable wavelength (455-470) for one minute (**Figure 4**).
- 5. Begin colorization by adapting GM35 to define the root eminence







transitional area





areas—remember to stay within the long axis, and keep bulk within tooth line angles. A short burst (six seconds) of halogen light will precure the placement (**Figure 5**).

- 6. To aid in smoothing and blending, a rubber tipped composite tool or similar can be used to remove application creases while Gradia is in its pre-cure state (**Figure 6**).
- 7. Next, apply GM33 to the transitional area from hard to soft tissue. Depending on base shade being used, you may substitute GM32 or GM31 for your default color for this area (Figure 7). A short burst (six seconds) of halogen light will pre-cure this step.
- Apply a final Gradia layer in the vascular mucosal area. This area presents itself as reddish in color as it depicts heavy surface vascularity. Use GM36 (Figure 8) to attain this

effect and pre-cure again for six seconds.

- 9. Inspect your colorization smoothing or coloring deficient areas and precuring until satisfied.
- At this point, in order to final cure, the Gradia, an air barrier (Figure 9A) is applied to the precured surfaces and exposed to the appropriate light wavelength (range of 300-500nm) and intensity for three minutes.
- 11. Wash off the air barrier after the curing sequence and proceed to the finishing steps.

Finishing can be accomplished in one of two ways.

 Mechanically using diamond polishing pastes and brushes using conventional polishing techniques for composites (Figure 9B).







 Coating with GC Optiglaze, a light cure nano-composite protective coating imparted with a unique texture coined by this author as Optistipple. To Optistipple the surface, you will need GC Optiglaze clear, a dedicated brush only used for this product, a foam sponge tip brush, a halogen light box (Proform, Triad or similar), GC Step Light or GC Labolight Duo, a soft goat hair star brush, a soft goat hair wheel with chamois center and muslin buff (one to two inch).

The Optistipple Technique Process

- The surface should be final cured, clean and dry. There is no surface primer needed when coating with Optiglaze.
- Lightly coat, but not so it is dripping wet, the entire Gradia-enhanced surface with GC Optiglaze clear.
- 3. Take the sponge tip and dab while still uncured, pulling the tip away rather than across to pull small dimples off the surface. Stay off the teeth during this process. Pre-cure for 10 seconds under a halogen light source and, then, inspect the surface for uniform effect. If additional layers of Optiglaze are needed, apply glaze and dab corrective area, pre-cure again for 10 seconds. Once satisfied with coverage, a final cure of no more than one minute accumulatively under



a halogen source is required. Over curing Optiglaze can cause a postexposure yellowing, so take care not to overexpose (Figures 10A, 10B and 10C).

4. Once the surface is cured final, take some liquid polish and a soft goat hair star brush on a micromotor handpiece at very slow speed and lightly polish down the glassy surface and the height of the surface dimples to a satin-like condition. The task is to not remove the Optiglaze, but to condition the surface to be bumpy without being rough. Once that has been accomplished, take a dry, clean,



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muslin buff and polish final at slow speed. The effect should be a glossy, but not glassy, almost orange peel like surface (**Figures 11-14**).

5. Use soap and water to remove any residual paste and case is complete (Figures 15 and 16).

About the Author:

Thomas Zaleske, AS, has been a dental technician and lab owner in the Chicago metropolitan area for 30 years, simultaneously offering independent laboratory and corporate manufacturing consulting for the last 15



years. He has been a key opinion leader in the removable prosthetic division at GC America for five years. He also runs a dental technology YouTube channel TomZale56, which has over 40 videos on lab products and techniques. Videos on these products and techniques can be found on my Youtube channel TomZale56.



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<u>Tech Tip</u>

By Fernando Deleon

FACIAL MICRO-LAYERING

Are the Results of Micro-Layering Worth the Time?

"Start by doing what is necessary, then do what is possible and, suddenly, you are doing the impossible."— Francis of Assisi

> t's my passion to understand the features and benefits of various materials and find methods to draw the very best results from each material I use in the most efficient way. When it comes to ceramic restorations, there is a major trend towards monolithic materials and stains. For esthetics in the anterior region, I always micro-layer the facials of my e.Max restorations.



Micro-layering is the most efficient way to achieve esthetics that mimic natural dentition and achieve a surface that is dense, smooth and biologically friendly to the patient's periodontium—results that aren't always obtainable with a full contour stain and glaze approach. Micro-layering has become the standard at my lab for quality and efficiency.

In the case shown in **Figure 1**, the facial aspect of the e.Max restoration is undersized approximately .5mm. Prior to layering the enamel, this unit was fired with an application of Incisal Clear Florencence (GC) on the facial using a dusting technique and treated on the lingual and interproximals with Glaze Past Fluo (Ivoclar) to achieve a high glaze. The unit is being layered with a combination of Florescent Dentin Modifiers in pink (Fluo 91, GC) applied in the general vicinity where the manalons would appear.

Figure 2 shows a layer of Enamel Opal in white (EOP 1, GC) being applied on the vertical incisal line angles and additionally in a horizontal band to soften the transition between the middle and incisal third. Then, to enhance the colors and translucent effects, an Enamel Occlusal Powder white intense opaque modifier (EO 15, GC) is used sparingly between the layers of dentin and





enamel. Lastly, a thin layer of enamel with a small amount of dentin is utilized to cover the whole facial down to the margin (**Figure 3**).

After the unit is fired, and lightly shaped with diamonds, a Final Facial Glaze (Al/ZR TI GL, Lisi, GC) is applied thinly (**Figure 4**). Extremely small craze lines are applied using Luster Paste White (L-2, GC). This intense opaque white stain is applied vertically on the surface with sharp applicator to further enhance the internal effects. Any minor shape corrections are done at this time. Next, polish the restoration putting all the attention to the facial aspect of the restorations because the contour and glaze of the proximals and lingual was finalized in the first firing (**Figure 5**). You can see the final results in **Figure 6**.

To achieve restorations that represent our lab in a manner that we envision, we first have to do what is necessary to achieve the outcome we are portraying. Micro-layering the facial aspect of anterior restorations is necessary to achieve the results we, our dentist clients and the patients expect. And, while doing what is necessary, I have enjoyed learning the possibilities we can achieve with modern materials in esthetics.

About the Author:

Fernando Deleon has been a dental technician for 25 years, owns Precision Esthetics in Apopka and is president of the Florida Dental Laboratory Association.







The Hub

Sales and Use Tax Exemption for Purchases of Industrial Machinery and Equipment Applies to Dental Labs

An exemption from sales and use tax is available for purchases of industrial machinery and equipment used at a fixed location in Florida by an eligible manufacturing business that will manufacture, process, compound, or produce for sale items of tangible personal property. The exemption also includes parts and accessories for the industrial machinery and equipment if they are purchased before the date the machinery and equipment are placed in service.

An eligible manufacturing business means any business whose primary business activity at the location where the industrial machinery and equipment are located is within the industries classified under manufacturing NAICS (North American Industry Classification System) codes 31, 32 and 33 published in 2007 by the Office of Management and Budget, Executive Office of the President. The primary business activity of an eligible business is that activity which represents more than 50 percent of the activities conducted at the location where the industrial machinery and equipment are located. Find out more at http://floridarevenue.com/dor/tips/tip13a01-06.html.

Fall FDLA Workshops a Success



(Above: From left to right) Jared Fielding, DTG, Nancy Franceschi, CDT and Rick Sonntag, 4 Points Dental Designs, with participants of the course.

FDLA members turned out to learn at two recent FDLA District Workshops. In October, 4 Points Dental Designs, Inc. hosted a hands-on workshop in St. Petersburg. We would like to thank GC America, Inc. for sponsoring the session, Dental Morphology: A Vital Foundation, presented by Jared Fielding, DTG. On Nov. 12, Zahntechnique, Inc. hosted a hands-on workshop in Miami. We would like to thank 3Shape for sponsoring the session, Advanced Design and Customization of 3Shape, presented by Mark Ferguson.

(Right) Hard at work during the St. Petersburg course.





(Above) Mark Ferguson presenting his workshop.



(Above) Mark Ferguson (far right) with participants of the course and Alexander Wünsche, Zahntechnique (kneeling).





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Focal Point

Professional Happiness

erry Fohey, CDT, DTG, knows how many dental technicians and laboratory owners in Florida work insane hours—coming in early, staying late and working on the weekends. It doesn't have to be that way and at the Southern States Symposium & Expo, he'll be showing dental technicians and laboratory owners how to change their schedules and develop professional happiness.



I think dental laboratory technology has a future and it's a terrific profession. "Somebody out there will think my approach is crazy," said Fohey, who is the CEO of NuCraft Dental Arts in Athens, Ga. "But my approach really works."

A chance encounter with a dental laboratory instructor when Fohey was 16 led him into dental laboratory technology, which turned out to be a great fit.

"I think the fact that I'm dyslexic helped with my visual spacial skills and everything clicked with the technical aspect of things right away," he said.

What didn't click was the high-production atmosphere at the first dental laboratory he worked at after graduating from Atlanta Technical College. After bringing up his lack of job satisfaction one day, his father suggested he get into more high-end dentistry. As fate would have it, there was a sales rep at the lab who suggested Fohey get in contact with Dr. Pete Dawson.

"He was going to be in Charlotte doing a seminar," Fohey said. "That was a four hour drive, so I signed up for the seminar and went."

And that changed everything.

"My first adventure in a different type of dentistry was with Dr. Pete Dawson," he said. "I kept going to learn more and more ... eventually I went to work for Pete's multi-doctor practice. It helped me regain my enthusiasm for dentistry because when dentists and dental technicians work together as part of a community to treat patients at the highest level of treatment great things happen." Which brings us to his keynote address, Life In the Foxhole Together, at the May 11-13 Southern States Symposium & Expo at the Renaissance Orlando Resort at SeaWorld. After hearing him speak about his experiences in the dental laboratory profession, there are three things you'll be able to take away and apply to your own career in dental laboratory technology.

- It is entirely possible for a committed dental technician to be part of the profession of dentistry. They do not have to be under the thumb of corporate dentistry or another entity to be an integral part of dentistry and treating patients.
- 2. Dental technicians and laboratory owners do not have come in at 4:30 a.m. and work until midnight. They can have weekends off. "That's what being a professional is," he said. "If you are a professional, you will receive a fee that allows you to have a reasonable work life balance. Part of being a professional is having a life outside dentistry."
- 3. The dental laboratory profession, despite all of its challenges, is still a terrific profession to be in. "I am encouraging my daughter to come into the business because she is artistic and loves helping people," Fohey said. "I think dental laboratory technology has a future and it's a terrific profession. There's fewer and fewer of us out there, so there is a need for talented educated technicians."

We hope to see you in the audience during Fohey's keynote at the 2017 Southern States Symposium & Expo. Find out more at www.fdla.net/symposium.

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